JUNE, 1929

COTTON

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Cutting *the* Fuel Bill *by* Stopping *Steam* Leaks

By C. T. Baker
Consulting Engineer, Atlanta, Ga.

OFTEN it may be possible to effect material savings of fuel and energy in the mechanical department of the mill by following a simple plan of regular and periodic inspection of the apparatus installed, including in such a plan the boiler plant, steam heating system, steam piping in general and all apparatus and equipment to which power or steam is supplied.

Neglect of equipment is almost certain to occur unless a systematic method of inspection is followed by those responsible for its operation and maintenance.

With a view of assisting engineers and master mechanics, who are interested in obtaining the highest possible efficiency and getting the most out of the equipment in use, the following suggestions are offered.

STEAM is essential to the mill for process and heating purposes. Many operating executives, however, regard such things as traps and pipe coverings as something of a necessary evil, and overlook many opportunities for economy and efficiency.

In a year's time, the fuel bill of any mill is an important factor in its total cost of operation, and this article cites a number of ways in which the operating head, with his master mechanic, can cut some rather prominent and, we suspect, rather common expenditures, and reduce the fuel bill considerably.

A regular and periodic inspection of the mechanical apparatus is recommended, and in connection with steam traps and pipe coverings, Mr. Baker draws upon extensive practical work in a number of mills to point out several ways of possible savings.

It has been the writer's observation that one of the principal sources of steam waste in a mill may be traced directly to defective steam traps. If we will consider for the moment the function of a steam trap, we will soon understand that it is installed for the purpose of collecting and removing condensation from steam piping systems. Since these traps operate at the prevailing steam pressures, as used in the plant, it is obvious that, if such apparatus is neglected to the extent that the outlet valves, for example, become defective, due to the eroding action of steam and water, or from any other cause, they will leak and in so doing waste steam.

Steam Traps

Any trap that is continuously passing steam is wasteful since steam that escapes through the opening performs no useful work and must be replaced by other steam as rapidly as wasted. The loss of steam due to leakage is particularly pronounced if the pressures carried on the system are high, since the higher the pressures the greater the weight of steam per cubic foot and therefore the greater the loss.

The accompanying sketch, Fig. 1, shows a practical method for connecting up steam traps in such a way that tests for leakage may be made at any time. It will be noted that in addition to the usual inlet and outlet pipe connections there is provided a test valve at the discharge side which may be opened at any time and which will indicate whether or not steam is escaping past the discharge.

It will also be noted that a by-pass is provided which enables the trap to be taken out of service for repairs without necessitating a shut-down, which is accomplished by closing valves *a* and *b* and opening slightly valve *c* on the by-pass which will temporarily drain the water from the system until repairs to the trap may be made.

Certain makes of traps give more or less trouble due to breaking of the small working parts and the cutting out of the discharge valve. In order that they may be kept properly repaired it is necessary to carry a few repair parts in stock so that they may be available when needed. Too often repair parts must be ordered from the factory and this necessitates considerable delay with the result that the loss of steam is occurring over a much longer period than would otherwise be the case if the parts were carried in stock.

Another important thing which is frequently overlooked in the setting up of steam traps is the matter of trap supports. Too often traps are installed in a slip-shod manner, are not set level, or are otherwise improperly installed, with the result that no matter how expensive or how good the trap may be it cannot function properly.

Referring to the illustration, Fig. 1, it will be observed that all that is necessary to do when it is desired to test the trap for leakage is to close valve *b* and open the test valve *d*. If there is any steam leakage through the trap, such leakage will be immediately apparent by the presence of steam at the end of the short nipple screwed in the test valve.

Sometimes steam is needlessly wasted by the operators of certain machines in the careless manner in which the trap by-pass is used when first starting a machine where it may be desirable to open the by-pass for a short period to clear the system quickly of water, like for example on slashers that have been

POWER transmission and steam are two phases of the mill man's responsibility which, generally speaking, receive less of his careful attention than their importance and effect upon Net Profit would warrant.

This article outlines several causes of steam waste which can be corrected by proper inspection, test and maintenance, and will present much helpful suggestion.

It is our purpose, beginning with this discussion, to publish from time to time articles of a practical nature, for the mill man, concerning these and other related phases of his work.—Editor COTTON.

idle for some time, over night, for example.

In one case which the writer investigated some years ago in an effort to locate the reasons for high fuel consumption, a very flagrant case of steam waste at the trap by-pass connections was discovered. This condition is explained in the following quotation from a general report which I made on this plant:

"On Thursday morning at 8:30, it was found that five by-pass valves were wide open on traps serving five out of nine slashers. During the time from about 6:30 to 8:30 A. M., steam was being wasted at boiler pressure through five ¾-inch by-pass connections which had called for the burning of considerable extra coal under the boilers."

It is evident that such practices as this will, if followed regularly as was the case in the plant referred to, result in an enormous waste of fuel over a period of a year's operation.

In order to eliminate this wasteful practice, key-lock by-pass valves were substituted for the standard valves and one man was held responsible for the handling of the new by-passes. Since only one man had access to the key it was an easy matter to eliminate the wasteful use of steam occurring in the slasher room in this particular mill.

Another mistake made in many mills is to permit the hot condensate from the various steam traps to be discharged to the sewer. This is an extremely wasteful method of disposing of condensate and takes a heavy toll in fuel. Such condensate should be returned to the feed water heater or a collecting tank in the boiler room, where it may be available for boiler feed. This plan not only affords hot water for boiler feed purposes but also supplies water that is free from incrustating solids such as would cause heat insulating deposits to form on the water heating surfaces of the boiler.

Another source of steam waste often found in mills results from an attempt to drain some part of the steam piping system by the partial opening of a drain valve located at low points or on water legs at various locations in the system. This is at best a make-shift arrangement and very unsatisfactory since if the valve is opened sufficiently to keep the lines free from water a great deal of steam will be wasted, but, on the other hand, if the valve is opened only slightly so as to prevent the waste of steam, water will collect in the lines more rapidly than it is being drained off, consequently the object of the drain is defeated.

Good steam traps are not expensive and should be installed in piping systems whenever it is necessary to remove condensate. Any other method than this will prove wasteful in the extreme.

Steam Pipe Covering

A great deal of steam and fuel are wasted in mills due to the neglect of steam pipe covering. As a rule, most steam lines have been insulated but there are still too many mills in which no steam pipe insulation has been provided. Usually, however, investigations develop the fact that when pipe covering has been removed for the purpose of repairing steam leaks, etc., it has not been replaced, with the result that a considerable amount of bare piping is exposed to the cooling effects of the surrounding air.

Then again, many mechanics figure that—in making additions to the piping system where only the smaller size pipe is used, such as ½-, ¾- and 1-inch, it is unnecessary to bother covering these small lines, particularly if their length is relatively short. This, however, is a mistaken idea since every square foot of piping exposed to the atmosphere causes a certain amount of steam to be condensed and this in turn means fuel loss.

As an example of the losses incident to bare or uninsulated pipe, the following data are given:

EXAMPLE:

Steam pressure gauge	100 pounds
Temperature	338 degrees
Difference between temperature of steam and surrounding air	288 degrees
Loss per square foot per hour	820 B.t.u.
Waste of coal in pounds per sq. ft. per year	718
Number of sq. ft. of surface that wastes one ton of coal in one year	2.79

It is evident from these figures that neglecting to insulate steam piping systems will materially increase the cost of producing steam.

Not only should pipe covering be used wherever steam is conveyed from one part of the building to another, but also care should be exercised in applying the covering. For example, the ends of all joints or sections of the covering where they butt together should be sealed so as to make an air-tight joint.

This is also true where the molded sections of pipe covering come in contact with fittings, since wherever there is an open space or crack at the end of a section of pipe covering there is bound to be some circulation of air between the covering and the pipe itself, and where this occurs condensation also occurs. Regardless of how tight the molded covering may seem to fit the pipe there is still enough space to permit of air circulation between the pipe and the covering, and unless all joints are carefully made, losses due to air circulation as described are inevitable.

Pipe covering should be inspected at stated inter-

vals and maintained in first-class condition. Too often the idea prevails that just so long as the pipes are insulated nothing more may be done. This is a mistaken idea since pipe covering is no different from other parts of the plant in one respect: it needs occasional attention to insure that it functions as near 100 per cent as possible.

When considering insulating materials for insulating steam lines, it is well to remember that the higher the steam temperatures the greater will be the loss due to radiation through the walls of the pipe. Accordingly when placing orders for pipe insulation it is important that covering be purchased such as will adequately meet the prevailing steam temperatures.

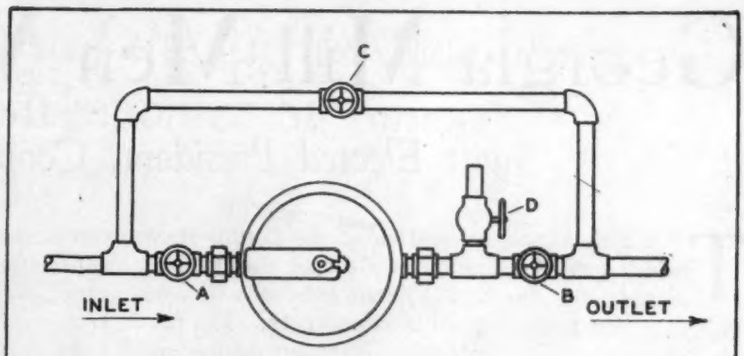


FIG. 1

For pressures of 50 pounds or lower, a low temperature covering may be used but for pressures of over 50 pounds the standard thickness should be used. For pressures of 250 pounds and over, only extra heavy covering should be used.

Sometimes the owner or manager may feel that he is saving money by purchasing the lighter materials; this, however, is erroneous and when asking for quotations on pipe covering the pressures and temperatures under which the covering is to be used should be stated, and the manufacturer asked to bid on covering such as will be guaranteed to give the minimum radiation losses under the conditions outlined. Only pipe covering should be purchased such as is fully guaranteed and no covering made of cheap and inefficient materials should be considered. Bidders should be asked for a statement of heat leakage losses for various size covering per square foot of surface per degree difference in temperature between the temperature of the steam and temperature of the air surrounding the covering. This stated in B.t.u. per hour will be indicative of the covering efficiency.

[Comments from readers as to their interest in such subjects as this will be appreciated. In addition to traps and pipe covering, there are many related subjects which affect the efficiency and profit of your mill. Would you like to read more concerning them?—The Editor.]

How to Figure Dust Room Capacity

THE following instructions for figuring the capacity and size for a dust settling chamber, inlet and chimney, in connection with the picker room, will probably be of interest to many readers:

First, determine the speed of the different fans in the pickers. Should there be any other fans, such as large exhaust fans or discharges from vacuum strippers, these must also be taken into account. An ordinary picker fan will discharge one cubic foot of air per revolution, or 1,100 cubic feet with the fan running at 1,100 r.p.m. Therefore, if there are twelve fans running at 1,100 r.p.m., then 13,200 cubic feet of settling chamber would be required. This is not enough to take care of the twelve fans, and therefore, 50 per cent more space is required to allow the air to become dead. Otherwise, the constant pressure in the chamber will force the air into the dust flue and there is always an atmospheric pressure of 14 pounds to the square inch against this. Therefore, the 50 per cent additional space is necessary.

This would call for a dust chamber, for twelve fans, containing 19,800 cubic feet of space. If a No. 7 fan is also discharged into it, this would have to be increased. A No. 7 fan running at 1,360 r.p.m. will draw 3½ ounces on the mercury tube, or discharge 5,550 cubic feet of air per minute, running at this speed. Therefore, the addition to the settling chamber would be 5,550 plus 50 per cent, which would be a total of 8,325 cubic feet. A No. 8 fan running at 1,185 r.p.m. will draw 3½ ounces on the mercury tube and discharge 7,600 cubic feet of air per minute. The addition of 50 per cent would make the addition to the settling chamber space 11,400 cubic feet additional.

The opening leading to the flue and the area of the chimney would be figured as follows: The area of a regular picker fan which measures 21x17 inches would be 357 square inches. The combined area of twelve fans would equal 4,284 square inches or 30 square feet. It is customary to add 100 per cent, which would make 60 square feet as the area of the outlet into the chimney. This addition is made in order to offset any back pressure which would be caused through having the opening smaller or equal in size to the combined areas of the total number of fans.

The area of the bottom of the dust chimney would be figured similarly to the opening, and would be 60 square feet. The height of the chimney is usually figured around 45 feet, and is always raised three to five feet higher than the building. This is done to prevent any cross-currents which would occur if the top of the chimney were level with the top of the mill.

Should a No. 7 or a No. 8 fan be discharged into the dust chamber, additional space must be allowed in the chamber outlet to the chimney and in the area of the chimney itself, in ratio to the figures given. It will be noted that the capacity of a No. 7 fan running at 1,360 r.p.m. is five times more than the discharge from a regular picker fan running at 1,100 r.p.m. Therefore, additions to the dust chamber, etc., would be made accordingly.

Georgia Mill Men Meet *at* Beach

Swift Elected President; Cooperation Stressed

THE 29th annual convention of the Cotton Manufacturers' Association of Georgia was held at Sea Island Beach, St. Simon's Island, Ga., on Thursday and Friday, April 25th and 26th. The features were a series of addresses emphasizing the importance of cooperation; election of officers; and a thoroughly enjoyable entertainment program which included the several forms of sports and recreation afforded by the beach resort, a palatable banquet, and suitable entertainment for the large number of ladies attending with the delegates.

Left, Clifford J. Swift, Swift Spinning Mills, Columbus, Ga., who was elected president succeeding J. J. Scott, right.

Clifford J. Swift, vice-president and general manager of the Swift Spinning Mills, Columbus, Ga., was elevated to the position of president of the Association succeeding J. J. Scott, president of the Scottdale Mills. D. A. Jewell, Jr., vice-president, Crystal Springs Bleachery Company, Chickamauga, Ga., was made vice-president, and D. W. Anderson, of New Holland, treasurer. T. M. Forbes, secretary, and C. W. Chears, traffic manager, as well as Hatton Lovejoy, general counsel, were re-elected.

There were two business sessions. At the first, on Thursday morning, Howard I. Coffin, who is developing the Georgia coastal islands, welcomed the delegates, and G. I. Parmenter responded for the visitors. George A. Sloan, secretary of The Cotton-Textile Institute, Inc., was the first feature speaker. Mr. Sloan outlined in brief the general activities of the Institute, stressing particularly the efforts and accomplishments along the line of establishing cotton as a style fabric, and in developing new uses for cotton and extending present applications.

Major I. D. Carson, of N. W. Ayer & Son, Philadelphia, spoke next on the subject of advertising as applied to the textile industry. Frank K. Petrea, superintendent, Swift Mfg. Co., Columbus, Ga., told of the work of the Textile Operating Executives of Georgia, organized by the superintendents of the state for practical discussion; and Joseph C. Cobb, secretary, The Arkwrights, Inc., read a paper prepared by President F. Gordon Cobb regarding the activities of this research organization.

On Thursday afternoon the Association golf tournament was held, and an attempt is made on this page and the one following to depict this partially in a pictorial way. There was a cup to be awarded the player netting a score nearest a number selected between 70 and 80 by somebody, after a self-imposed handicap had been subtracted from the figure representing his gross score. That sounds complicated, but it is not nearly so much so as was the situation itself. The committee reported (without verification) that P. E. Glenn and I. A. McDaniel had arrived at the same number, which was the number selected by the unknown committee. Hatton Lovejoy was to present the cup to the winner, and finding two of them, Hatton turned the tables on the interpretation of jurisprudence employed by Solomon and decided to keep it himself. P. E. Glenn, however, called his attention to the fact that the cup was a thing of beauty, rather than utility for purposes best known in connection with Lovejoy. Lovejoy then decided to continue using his old standby (see adjacent photograph) and in some way the cup reached Mr. McDaniel, the rightful donee.

COLONEL LOVEJOY CARRIES THROUGH.

Hatton Lovejoy (right above) expressed the highest praise for the extraordinary service afforded at St. Simon's, providing every convenience even on the links. The others, reading left from Mr. Lovejoy, are Henry Smith, C. W. Coleman, and M. M. Trotter.

Millard Reese, of Brunswick, made the address of the evening, in the absence of Eugene R. Black. A splendid musical program was rendered, featuring some solos by Mrs. Julian Hightower, of Thomaston. "Father" Jewell presented the retiring president's medal to Mr. Scott as the concluding feature. The visiting ladies on Thursday afternoon, were feted with a bridge-tea, and Friday afternoon was spent in golfing, fishing, etc.

Some Illustrations of the Lighter Side of the Georgia Convention at St. Simon's

The beautiful courtyard and fish pond at Cloister Inn, St. Simon's Island, where convention headquarters for the Georgia meeting were maintained; one of the attractive spots of the island.

Secretary Forbes and Mrs. Forbes are shown here with Mrs. Julian Hightower and Mrs. Hatton Lovejoy, and Colonel Lovejoy, Julian Hightower and Chilton Coleman also present.

W. H. Hightower, Ely R. Callaway, Fay Pierce and Julian Hightower comprised one of the foursomes.

Norman Elsas is shown here between Cason Callaway, left, and Grady Kennington, right.

Left to right are J. W. Stribling, Walter Mitchell, W. W. Meeks, and R. W. Philip.

Here Norman Elsas, who was low medalist in the tournament, is shown practicing a drive with Grady Kennington serving as his tee.

What Are *We* Doing About This?

FACTS are pretty stubborn things and there's no need of passing up a condition simply because it requires a little more spunk and work and hard thinking than is necessary in following the line of least resistance.

There's no one thing that will cure the ills of the industry; but in sending us this discussion on a pertinent subject, a well-known Carolina operating executive feels he has directed attention to a common ailment. We present it, for your reading, as his individual view of the matter.—The Editor.

TO those of you whose textile experience encompasses the last two decades, the following conversation must be a very vivid recollection:

Applicant for work:

"Is this the superintendent?"

Superintendent:

"Yes."

Applicant for work:

"Need any help? I got one weaver, two spinners, one doffer and I sweeps or lays up roping, and my boy Jim, what ain't right bright, hauls filling, and Mandy spools when she's able."

Superintendent:

"I could use a good weaver and a couple of good spinners, but I don't need the rest of your family."

Applicant for work:

"Well, I reckon we will move on and see if we can't all get a job."

* * *

What was too often the result of such an interview when you were real short of spinners and weavers? You know that you made a job for the old man; you made a job for Jim and you made a job for Mandy. You didn't have much for them to do; they didn't do much, but you thought if you could keep the job going, the extra expense wouldn't make much difference.

The old, family system of employment, much to the advantage and credit of all concerned, is extinct, except in isolated cases, but practically every mill organization will be found to be more or less honeycombed with jobs for which the pay is low, and the help that fills these jobs will be found to be the most expensive and highest paid for the return received of any on your payroll.

Walk through the mill and take a look at the two old men sitting on a box and dozing over the waste table, occasionally picking out a piece of good cotton, but most of the time sitting and thinking. You might not think they were the highest paid men in the organization. But, investigate and you will find they are doing about one-fifth of a day's work and receiving about two-thirds of what an able man's pay should be. Send them home and put one man on the two jobs and give him three-fourths of the pay received by the two of them. Then stop and think what you have accomplished:

1st. You have reduced the cost of manufacturing.

2nd. You have increased the quality and quantity of the work done.

3rd. You have improved the personnel in that department.

4th. You have improved the working atmosphere by introducing an element of alertness and energy as opposed to two elements of inertia.

5th. You have placed the able and capable operatives in a better position to take care of those in their family who are not able to work.

6th. You have raised the average pay received by your operatives.

7th. You have raised the standing of the industry in the eyes of the public.

Of course, it will be said that some of these positions are filled by old and faithful employees, and you may wish to retain them for that reason, or you may wish to send them home with a small pension, for which they would be most grateful. In the latter case all the benefits listed herein, would still be achieved and the industry would be credited by the public generally with a considerateness for their employees which they are now exercising, but which is not understood or appreciated.

These jobs filled by the faithful old employees are very much in the minority. On the other hand, you are filling them every day, and training up people to do one-fifth of a day's work, who might otherwise be full fledged and competent workmen. You will find these jobs by different names and in different departments of the mills, especially among the day workers and the general non-productive help in the mill.

A college boy, home for vacation, obtained a job hauling filling in a weave room. In two weeks he quit. He was bored to death because he didn't have enough to do to make the time pass away agreeably. He would get all the filling boxes filled and have to wait idly by for from a half hour to an hour before he could fill them again. One filling hauler counld have done the work of two in that weave room. Better men could have been employed and paid more money, and yet the work would have cost less.

Take the average mill and turn the searchlight of intelligent and thoughtful investigation on each job, not with the idea of replacing the present help with cheaper help, but with the idea of making a job for an able, energetic operative, to whom you can afford to pay a good wage and at the same time reduce your cost of production. The weakest and least competent operating executive in the industry can reduce costs by cutting wages, which may at times seem to be a necessary step for existence, but it is the strong, farseeing and intelligent man who can reduce costs by raising wages. The competent executive keeps before him, week by week, his labor cost per pound. Let him place with this figure, his average weekly wage. When at the same time the first figure is decreased and the latter figure increased, he should experience a peculiar gratification that he has the ability to be responsible for a progressive step in his establishment.

Improving *Breaking* Strength and Oil Spraying *are* Discussed

Warp Preparation and Other Subjects Also Covered at Henderson Meeting of Eastern Carolina Division of Southern Textile Association

MEANS of improving breaking strength of yarn, experiences with oil-sprayed stock, and other questions of current and pertinent interest were discussed in detail at the Henderson, N. C., meeting of the Eastern North Carolina Division of the Southern Textile Association on Friday, May 10th.

D. Frank Lanier, superintendent, Oxford Cotton Mills, Oxford, N. C., retiring chairman of the division, was in charge of the meeting, and each question was handled by sub-chairmen.

A good attendance of mill men, representing mainly the soft yarn spinning mills in the eastern part of North Carolina, manifested a lively interest in the discussions, which developed a number of valuable pointers. Without attempting to select the discussions in the order of their importance and general interest, the following story will give a running report of the discussion as it developed.

AFTER the preliminaries, Mr. Lanier announced that the first subject for discussion would be the better preparation of yarn for weaving, and asked P. B. Parks, assistant manager, Erwin Cotton Mills Co., West Durham, N. C., to lead this discussion.

"There is very little that is new on this subject that we could bring out," began Mr. Parks, "but possibly there are a few things that we may remind you of. There are only three processes that you might list under the heading of warp preparation: they are spooling, warping and slashing. Yet all of the skill that has been used in the manufacture of yarn sometimes can be lost in the slashing, and when it is lost the entire weave room production schedule is upset." He then gave the results of some tests which he had made to determine the causes of loom stoppage. The test covered 52 looms running for 9 1/3 hours, and out of 318 stops, he found 43 stops due to knots from the spooler. There were 40 other stops caused by "slip knots," he continued, pointing out that these were preventable; that they had been tied by mechanical hand weavers' knotters.

New Types of Warp Preparation.

In considering spooling, he pointed out, "some of us have the regular old-style spoolers, and some have the automatic spoolers and high speed warping, and others have the high speed cone winding making a large package and the warping is done over the end of the cone, at high speed. In each of these systems there is very little tension, and what tension there is is very even. With the ordinary spooling on, say, a 4x6 spool or whatever size you use, we often find we have sometimes some tight ends and some slack ends. The tight ends are no doubt caused by oblong skewers, etc., and some will cause kinks. We all know that we must wind a beam with the same tension in order not to have any small or large places. The small places will cause the yarn to stretch and the large places will cause slack ends at the slasher, and sometimes we do not know where they come from, but we have to go back to the warpers and look until we find them. They cause tangles and an endless amount of trouble not only on the slashers but on the loom. We should present to the slasher an even-tensioned yarn all the way across the section beam. With the high speed spooling and high speed winding that tension is very even.

"Taking up the slasher, we found, on this test of 318 loom stops, that we had 16 breaks for tangles, 10 for slack ends, and 49 for selvages (94 for this reason on another test), and we are not particularly proud of that—but this is one way to find out what you have; that was the way we went after it, to analyze the conditions as we found them." Mr. Parks pointed out that there are several things which will cause these troubles, among them being the way of handling the yarn in the slasher creel. Some people, he said, apply the system of individual weighting to the beams, for friction, "but we have never seen one that worked out right." Then, he pointed out, it is important to exercise good judgment in the selection of the size formula, the compound and softener used, etc. Then it is necessary to find the best way to mix that formula, whether to start with warm water, lukewarm water or cold water; just when to put in the starch, compound tallow, etc. With reference to the bad selvages, he added he had found one cause of these to be from pinching the yarn under the expansion roll, the edges of which were sharp.

Mr. Tatum Discusses Warp Preparation.

The chairman called upon C. S. Tatum, manager Consolidated Textile Corp., Raleigh, N. C., to discuss the question further. "I believe the method used by Mr. Parks in finding out the troubles is the best thing I know of," responded Mr. Tatum. "We should make these tests and find out the causes, and when we find the causes we should try to remedy them. I have made a number of these tests and they are usually very illuminating. You will find you have a lot of defects

Norman B. Hill, Secretary, Who Was Elected Chairman.

that you did not know about before."

Mr. Tatum then told of an experience he had recently, with reference to slack yarn in winding from section beams on the slashers. "We had one certain warper that was continually producing a bunch of loose ends on one particular end of the beam about one or two feet from the head of the beam. They were so slack that they gave trouble on the loom beam. We fooled with that warper quite a while, and finally found where it was coming from. We noticed that on that particular warper, on which we had an electric stop motion, the yarn was coming through in the normal way—the beam had not been reversed to wind backwards while all of the rest had been reversed—and was coming around two rods through the comb and onto the section beam; there was nothing there to take out the slack. On the others we had drop wires and the yarn was winding on in the reverse direction and this put more tension on it. On this warper, therefore, if we happened to have some full and some half-full spools on the warpers, there was nothing to regulate the tension, so we began to winding it backwards, and incidentally we changed the creels, and since that time we have not had any more slack yarn from that warper, but I do not know which produced more of the better results."

Keeps Size Mixture Overnight.

Mr. Tatum then discussed slashing. "You all know about the problem of slashing and getting the right size mixture and getting it cooked right. We all have our own ideas about the proper ingredients to go into the kettle, but I think we are all agreed on one thing, and that is that size should be cooked enough to be done, at least a minimum of one hour or possibly an hour and a half. However, I find some places where they do not do that. I did not know until the other day that there was a mill in existence with only one size kettle, but I was in one recently. That mill was throwing away about six dollars worth of ingredients every day because they had to run out what was left every night—and I think that they are now arranging to have another kettle. Some men will tell you that it doesn't pay to keep your size overnight, but I have done it both ways, and I keep mine overnight, and I have kept it over a week-end, but would not recommend that as a regular practice. I do know that it is practical to keep size overnight, and in a very small mill it is possible to throw away a hundred dollars a month by throwing it away."

Report on Loom Stoppage.

George F. Brietz, superintendent, Selma Cotton Mills, Selma, N. C.. was next called upon. He reported first on a loom stoppage test on a day and night run equivalent of 810 looms, stating that he had 387 stops, out of which he found the following causes: gouts, 49; knots, 74; kinks, 97; broken ends, 95; loose ends, 40; unknown causes, 24. Mr. Brietz pointed out that no end ever breaks without a cause, and the thing to do is to find out the cause. He added that out of about 200 stops, he found 40 of them caused by the warper. In his opinion, the biggest thing in reducing loom stops is to go back to the card room in correcting troubles, and in this connection told of a condition he had found on his spinning frames where he had a lot of bad fitting bobbins. He told of going through several experiments in changing the type and size of his bobbin until he finally settled on one which gives him about 18½ per cent more yarn, with fewer knots and much better results all of the way through. He said he had just recently burned 5,000 of the old bobbins. He pointed out that this eliminated a lot of his warper stops.

He continued by stating that the spooler room at his plant carries an unusually high humidity, and that he found a lot of his spools to have oblong holes in them. "We have done away with these and have put in fiber head spools that run smoother and more evenly."

Mr. Brietz told further of finding a lot of speeder bobbins recently which had worn badly. He made some roving on three of these bobbins, and put some stock on three bobbins that were not worn and were of the right size, and made a test on the yarn made from each. The roving from the bad bobbins produced yarn which weighed 37½, 35, 34, 39, 38 and 35 grains, with only two of the same weight and a difference of five grains from light to heavy. The yarn from the good bobbins, however, weighed 37½, 36½, 37, 36½, 36½, and 36½, although the average breaking strength of the two tests was about the same; however, he pointed out, "there was that variation which was caused by those bad speeder bobbins."

G. B. Byrd, superintendent, Caraleigh Mills Co., Raleigh, N. C., was next called upon. Mr. Byrd said they had been going through the problems of changing a mill from standard colored goods, ginghams, to print cloths with a view eventually to manufacturing broadcloths. He said the first thing they did was to throw out the old style spooling and put in high speed cone winding for magazine creeling into high speed warpers. He indicated that while the production figures had not yet come up to expectations, on the warpers, he had been able to start up some new looms at 95 per cent efficiency with warps from these warpers.

He further added that he has had more trouble than he had expected with regard to loose ends and slack ends.

Cockled Yarn.

In going onto 30s and 40s on local Carolina cotton, Mr. Byrd explained he had had some difficulty in regard to cockled yarn, and asked for discussion as to whether it was better to use unweighted middle rolls, or to use a saddle which gave a 50-50 distribution front and back or 25 per cent on the front and 75 per cent on the back. After a brief discussion of this, L. R. Gilbert, of Weldon, N. C., submitted the following question, "Here is a question I want to ask you spinners: If you are running without any weight on the middle roll, why can't you put saddles on and open the rolls up until the yarn will not cockle? If you have three rolls and no weight on the middle roll you are drawing over a space of two inches. Why can't you put on a weight and open up without cockling?" In Mr. Gilbert's opinion, Mr. Byrd could get good results by putting his weights back and opening the rolls up 1-16-inch further.

"I have had about 20 years experience spinning 30s to 45s, and I have had some experience with cockled yarn," said L. B. Crouch, overseer of spinning, Mill No. 1, Rosemary, N. C., "and I have found that weighting the rolls is the proper thing. You must take care of the long cotton and let the short fibers take care of themselves. I have always made a very good success spinning 30s and 40s and opening the rolls just enough to take care of the long cotton. If it gets to running short on an average I close them back. I have tried taking the weights off but did not make as good a yarn as to breaking strength."

Travelers in Spinning and Twisting

The next discussion was with reference to travelers as they relate to spinning and twisting. This had been assigned to J. W. Cates, superintendent, Edenton Cotton Mills, Edenton, N. C., who had in turn assigned it to C. C. Cates, overseer of twisting, who read the following discussion:

"The purpose of the traveler is two-fold: First, to insert twist into the yarn; second, to guide the winding-on process of the yarn. In consideration of the first purpose we may say that the spindle and the traveler working together put twist into the yarn. The most generally used method of finding the turns per inch does not make allowance for the delivery of the front roll. However, there must be some difference in twist, owing to the fact that the traveler will make fewer revolutions than the spindle, in order to take up the amount of yarn from the front roll, thereby causing a corresponding lack of wist.

"In our mill (as in most of your mills) this difference is so slight that it is not considered. From computations that we have made in our twisting department (and where you have twisting these frames must receive more consideration in the matter of twist), we find that the difference amounts to only about .38 of a turn per inch.

"The second purpose of the traveler is more important and should be given more study. The winding-on process brings to mind, first, the question of 'tension.'

"There are some mills that run their spinning travelers so light that the yarn balloons against the separators, and though the separators have been put there for the purpose of checking the ballooning of the yarn, it certainly does not help the yarn, the traveler, nor the ring for this excessive ballooning to take place. The sudden pull that is given the yarn when it hits the separator is transmitted to the traveler, causing it to vary in its course and, in time, to make the ring flange be worn in waves. The overseer that watches his frames will never let this happen.

"There has been quite a bit of controversy about heavy and light travelers. We all know that there must be a limit to how heavy or light a traveler may be. As we have already said, when the yarn balloons against the separator it has reached its limit of lightness. On the other hand, we may say that the traveler has reached its limit of heaviness when the breaking strength has begun to be affected because of the lack of elasticity of the yarn. At this point the ends will break at the beginning of the set and at the bottom of the traverse after the frame has been started.

"However, if a heavy traveler is used the yarn is wound on the bobbin much tighter, causing to be given: (1) A longer time between doffs, thereby reducing the cost of doffing; (2) Reduction in the cost of spooling, because more yarn can be handled by the spoolers and the spooler tenders; (3) Reduction in the number of knots in the yarn; a big help to quality and weaving; (4) More production, by reducing the amount of time used for doffing; (5) Reduction in the number of tangled bobbins, because it makes it easier for the yarn to stay in place on the bobbin; (6) The traveler will last longer, because it has more body, and as the tension of the yarn is drawing it nearer the bobbin it keeps the centrifugal force from holding it so tight against the inside of the ring; and (7) According to one of the well known machinery builders, a heavy traveler will not wear the ring as badly as a light one.

"In the case of the travelers for the twisting frames these thoughts, just enumerated, would have the same

D. F. Lanier, Retiring Chairman of the Division.

HAVING attended and reported every mill discussion meeting in the southern section since the beginning of these meetings, we have often felt that the large number of readers who did not attend perhaps would like to go further into some of the subjects discussed, with those who attended the meetings as well as with other readers of COTTON.

Therefore, if in reading the accompanying report, you would desire to know further details from any of the men participating, we shall be glad to endeavor to secure from them any additional information you may want. We feel certain these gentlemen will likewise be willing to cooperate further to a mutual benefit.—Editor COTTON.

results, if we were able to run a traveler heavy enough to compare with the spinning. Owing to the lack of separators on most twister frames, the yarn must have enough tension on it to keep the ends from ballooning together.

"These travelers, however, should be run as light as possible, because they affect the breaking strength of the yarn. Two-ply yarn does not have enough turns per inch to give it as much elasticity as single yarn, therefore we must be as conservative with it as possible.

"In connection with the winding-on process, we should consider the circle of travelers. There are several circles of travelers that will fit or nearly fit any ring flange. But, owing to the fact that a smaller circle will stand up in its course around the ring better than one of the larger circles we must consider the smaller circle the better. There is a limit to the smallness of the circle, because before the circle becomes fit for the ring it gets so small that it cannot easily be 'popped over' the flange without breaking."

After Clarence Cates' paper, Mr. Lanier exhibited a twister ring which, he explained, had become worn on the bottom side of the base instead of where the pull comes. He wanted some discussion on this point. Clarence Cates said he had had the same trouble with practically the same size ring (3-inch); that it doesn't occur as frequently on the finer yarns. On 8s/3 and 8s/4, he said, they had asked the traveler people to make the right kind of traveler, and had reduced the trouble by applying a traveler with a special circle which was considerably smaller than the one they had been using.

"I have noticed in traveler circles that the larger circle has a tendency to wear the ring because the pull of the yarn has a tendency to hold the traveler over to the side, cutting the side of the traveler and also the ring," observed J. W. Cates. "We have found that the smaller circle would be better and would last longer."

J. F. Allen, overseer of spinning, Caswell Cotton Mills, Kinston, N. C., said he had had the same trouble and believed that the trouble was that the circle is too large, "and this is the reason that wears. The better the traveler fits the better results you will get. If it is too large it will drag and wear."

Trouble similar to that of Mr. Lanier was reported by James W. Cooper, superintendent, Harriet Mills Nos. 2 and 3, Henderson, who said he had as yet been unable to arrive at a satisfactory solution.

J. T. Garner, of Rosemary, N. C., suggested that the difficulty might be found in the spindles not being plumbed but W. O. Wilson, overseer at Oxford, reported that these and similar conditions had been checked carefully. L. B. Crouch, after examining the ring, expressed the opinion that too large a traveler circle was the cause. "The circle should be large enough, but not so large that it will drag on the outside of the traveler. The outside of the traveler should not touch anything, and this one hits the holder. The circle is too large."

Oiling Raw Stock Cotton

The next question which had been assigned was a discussion of the manufacture of yarns for plush weaving, and J. T. Hilton, of the North Carolina State Textile School, at Raleigh, had been asked to discuss it. However, when Mr. Hilton indicated that included in his test was a simultaneous test between oiled and unoiled cotton, the interest of those present immediately turned in that direction and oil spraying of cotton, and its effects rather than making plush yarns specifically, was the subject of the discussion.

After giving an outline of the mechanical lay-out, etc., on which he was working, Mr. Hilton indicated very good success in running oiled cotton, and George F. Brietz, superintendent, Selma Cotton Mills, Selma, N. C., asked "if you were going to build a new mill would you use oiled cotton?"

To answer this question, Mr. Hilton called upon J. J. Brown, an instructor at the school, who had just completed an exhaustive comparative test at the A. M. Smyre Mfg. Co., Gastonia, N. C., between oiled and unoiled stock; Mr. Hilton indicated that his own experience with oiled stock had been several years ago.

Report on Test at Smyre Mill.

Mr. Brown, in replying, stated that his test had been conducted at the Smyre mill, where Marshall Dilling is superintendent, over a period, day and night running, equivalent of one month and four days. The test was being made by Mr. Brown as an application for membership in The Arkwrights, Inc., the research organization of the Southern Textile Association. Mr. Brown reported that the tests at the Smyre mill "showed that oil is a good thing. We will not say much about the breaking strength because there was no difference. But in the amount of dust and fly in the room there was a big reduction. The biggest advantage was in the number of ends down. We tested the number of ends down from the slubber through to the spoolers, and found that on the spoolers we had a little over 38 per cent less ends down on the oiled stock. Most of these ends broken were from slugs and other causes on the spinning and further back. The fewer ends down you have the better the yarn

(*Continued on page* 908.)

A DESCRIPTION of Dyeing *Raw Stock* Cotton

By Dunhill Marsden

THIS article emphasizes the importance of adequate equipment, as well as of quality materials. It discusses, in a readable way, the lay-out required for raw stock dyeing, and covers the operation from the preparation of the cotton through the extracting and drying. It describes several handy and useful appliances and devices for saving time and assisting quality production.

Later, an article describing a modern mill dye laboratory and its equipment will be presented in these pages.---The Editor.

RAWSTOCK dyeing has become such a common thing of late years that almost any article written on the subject would necessarily be a somewhat trite exposition of already well known facts were it not that the daily application of these facts in the practical dyeing of cotton constantly brings up new experiences and keeps the interest alive with new problems.

The original method of dyeing cotton and all other loose stock was to put it into a tub of dye liquor and stir it around with poles, paddles or whatnot, and resulted in very even dyeings and a lot of hot work. In time, machines were invented to take the place of the men to a certain extent and to handle the stock in larger volume. About the nearest approach to the original method is the revolving type of machine in which the stock is placed in a closed cylinder and revolved in the dye liquor. This also results in the even distribution of color throughout the batch.

Another idea, however, which is being tried today more or less successfully in all classes of dyeing is to keep the batch stationary and pump the liquor through it, and raw stock machines are the first and probably will always be the most successful examples of this method. The batch is not dyed as uniformly in these machines as in the revolving type or the old fashioned tub. Those colors which are mixtures of various dyestuffs tend to separate into their component parts during the dyeing operation, leaving different parts of the lot dyes different shades.

The Necessary Equipment.

Originally the liquor circulated from the bottom up through an open top and back through the pump to the bottom again. Now a machine has been developed with a closed top, circulating the liquor from the top down through the batch, the advantage if any lying with this type in that after dyeing, the batch can be blown out with compressed air which will not only drive out considerable water, but will also aerate those colors like vats and some sulphurs which need oxidation. There is no intention here to differentiate between these types. Good work can be done on all of them.

Essentially, an outfit for the dyeing of raw stock is rather simple, consisting of a pot to do the dyeing in, an extractor or whizzer and a dryer. Also, with the majority of colors, the application is not theoretically difficult. The practical and successful operation of this outfit, however, calls for a lot of hard work and considerable care. Things can and do happen and the dyer's job is not to get behind them, but to stay ahead of them. He has various mechanical, chemical and physical facts to contend with and if he keeps up with them properly it will keep his mind off his troubles. There are two things never found in raw stock dye houses—fat men and overalls with patches in the "bosom."

The pot, whizzer and dryer are the greater part of the dyer's equipment but not all of it. With the stationary machines there should be some way to get the dyed batch out and in position to be whizzed. An electric hoist running on an overhead track is commonly used, sometimes a swinging derrick. In rare cases the batch has to be unloaded by hand, or hauled up by a hand operated chain fall. In any event the batch should be dumped on some sort of grating which will hold the wet cotton off the floor a few inches so that the water that drains out can run off. This makes the cotton easier to handle, especially toward the bottom of the pile and it takes considrable work off the extractor.

The dyer should also have some sort of tank conveniently situated in which he can make up his dyes. It should be large enough to hold and dissolve properly the maximum amount of such bulky colors as sulphur dyes; it should be equipped with steam and water pipes, some sort of stirring apparatus if necessary and be piped to the dye machine so that the dye can be drawn into the machine when ready.

All this makes a nice lay-out and will pay for itself in the labor saved. In addition, however, the dyer needs something else. He needs cooperation from the purchasing department and other mill executives who determine what sort of stock he is to handle and what the shades will be.

Many dye house chemicals can be bought in various grades, and it is very seldom that cheaper grades save as much as they seem to at first sight. Sulphide, for instance, comes in solid, lump, pea, flake and other forms and it is all sulphide to the man who doesn't know the difference in the handling of these forms. The price variations between these forms is not great, but the mill buyer, seeing a few cents saved, may make a purchase which not only seriously handicaps

the dyer's work, but actually loses more in the handling than is saved in the purchase. Some salt has considerable sand in it. Maybe it doesn't hurt the dyeing, but it doesn't help the raw stock in the subsequent carding and spinning operations. As a general rule dyes and chemicals should be purchased on a strictly quality basis, and the dyer should determine what form is best suited to his needs.

"There are two things never found in raw stock dyehouses—fat men and overalls with patches in the 'bosom.'"

Most mill men will know better, but theer still seem to be a few who think that when cotton is colored, the color will cover up any and all defects. Of course it is at times possible in dyeing heavy colors to use a good grade of tinges which would not affect the shade sufficiently to be noticeable, but ordinarly the cotton sent to the dye house should be at least as good as the general run of the mill. In fact it is best to select bales as free of trash as possible, or else to run the stock through a preliminary cleaning process.

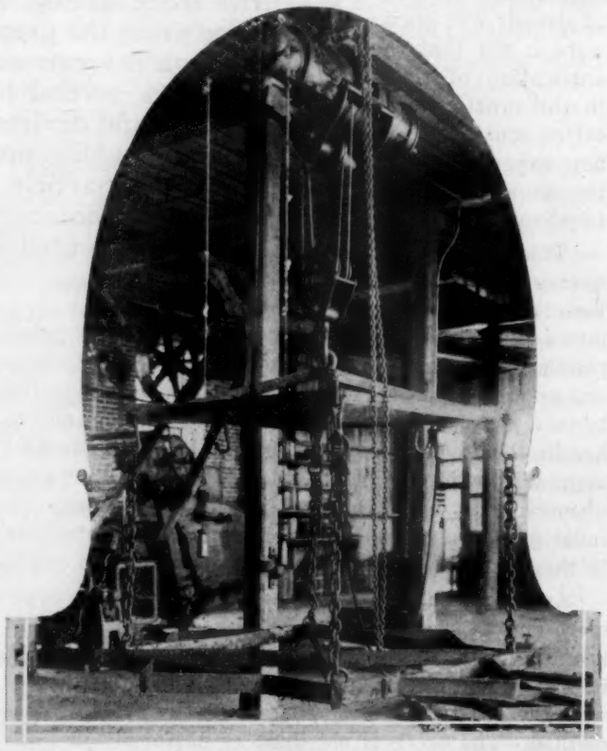
Cotton can be dyed right from the bale and run through the mill successfully. It is much better, however, to clean it first. Trash and motes are removed much more easily in the natural condition than after dyeing, and this is particularly true in the case of cotton that has been bleached. It is almost impossible to card bleached raw stock properly, and all possible trash should be removed beforehand. In addition, by using stock that has been thoroughly opened up before it gets to the dye machine, a better circulation is obtained in the machine and consequently more even colors. The objection to using cotton that has been cleaned is that unless it has gone through the pickers and is in the form of laps, it must be sacked up and is hard to handle. The cleaning and handling also increase the total cost of the dyeing operation to a certain extent, so that it is not always advisable to do this. It is best, however, where possible.

With all this equipment in place and ready to run and the purchasing department properly intimidated, the dyer is sitting pretty except for one thing. It is now up to him to do some dyeing, and in the doing of it he has three main things to shoot at—to match the required shade, to make as uniform a dyeing as possible and to leave the cotton in such a condition that it will spin when it gets in the mill. Very simple.

To that end, therefore, he begins to pack his machine, and the trick is to put the cotton into the tub in such a manner that when the liquor is forced through it, there will be an even circulation and no channeling. Frequently it is not necessary to pay any attention to this as stock dumped in almost any old way will probably not channel, but in case it does occur it is easy to overcome. Many dyers have set ways of packing and no general rule can be given here except that uniform packing makes for uniform dyeing. Incidentally, this packing is a very laborious and time consuming operation and some mechanical method should be devised of doing it quickly.

Some dyers overload the machine, and this can be done to a certain extent, but is not a very good idea. An 800 pound machine, for instance, may possibly take 1,000 pounds, but if packed too tightly the circulation may not be good, or channeling may develop. Also, what can be done with one type of dye may not hold for another, and in general it is wise to keep the machine to the capacity for which it is rated.

With the machine full of cotton and the lid on, the dyeing operation really begins when the water is turned in and the steam turned on to heat it up. During this time, the dyer turns his attention to making up



BASKET AND HOIST FOR UNLOADING DYED STOCK.

"These are made square or star-shaped, with the iron set on edge to give its full strength to the load. Chains are attached the same as to the false bottom. A frame is placed in the machine and the cotton is put in on top of it and in unloading it takes the place of the false bottom and lifts the stock out. It is not only much lighter, but does not have to be unloaded. It can be left on the floor under the cotton and another put in the machine. This saves a lot of time and work."

the dye. It goes without saying that this is the most important of all the operations, and yet it is one that is frequently sadly neglected. This is more true with raw stock dyeing than any other because sulphur colors are more generally used for this class of work than any other and sulphur colors are bulky and require large amounts of color, and also because the sulphide is somewhat objectionable to handle. So the dyer figures that if he is going to put in 60 or 70 pounds of dye, it won't hurt much to miss it a few pounds one way or the other, and he doesn't want to get sulphide dust in his nose anyway, so he lets George do it. This is all right if George is competent, but all dyes and chemicals should be weighed accurately and dissolved

(*Continued on page* 949.)

WEAVING *and* SLASHER ROOM Discussion *at* Birmingham

WEAVING AND SLASHING subjects were discussed at the Spring meeting of the Alabama-Mississippi-Louisiana Division of the Southern Textile Association, held at the Tutwiler Hotel in Birmingham, Ala., on Wednesday, May 8th. The meeting was in charge of D. S. Cook, agent, Pepperell Mfg. Co., Opelika, Ala., chairman of the division, and J. H. Howarth, assistant superintendent, Lanett Mill of the West Point Mfg. Co., conducted the discussions.

A fair-sized attendance was present, representing mills in the three states comprising the division, and the discussion, covering a variety of subjects pertaining to slashing and weaving practices, developed some points of interest. A report of the practical discussion will be found in the following paragraphs:

Life of Loom Supplies, Methods and Time of Cooking Size, Steel and Twine Harness, Etc., Covered

Average Life of Shuttles

The first subject discussed covered the life of shuttles, and read as follows: "Under average conditions, what is the life of a shuttle; taking into consideration the size and speed of the loom, and the weight of the goods, what shuttle has the longer life, dogwood or persimmon? Do you have all shuttles inspected by the second hand after being installed?"

Mr. Howarth was the first to answer this question, stating that "we are using in Lanett at the present time about 1.65 shuttles per loom per year. I would not say which kind of shuttle has the longest life, as I think it depends a good deal on the luck you have in running the looms; one shuttle might last fifteen minutes and another a year.

"One thing we do in Lanett is that every time a shuttle is given out, the number of the loom has to be given before the fixer gets the shuttle, and sometimes within the next few days the assistant overseer has to go around and look at that loom and see if that shuttle has been put in right and that it is running right. We find that has cut our shuttles down from just short of two to 1.65 per loom per year, and I think it is one of the best things we ever did in regard to shuttles—to have the loom inspected after the shuttle is put in."

"We make our records once a month on shuttle consumption, and find, that on denims, they range from 1.5 to 1.75 shuttles per loom per year," reported S. B. Schwartz, superintendent, Maginnis Cotton Mills, New Orleans, La. He added that they use only dogwood shuttles, and that they have no systematic inspection for each shuttle as it is put in.

"We have 30-inch looms, running at 165 and 168 r.p.m.," said W. C. Ryckman, superintendent, Lane Cotton Mills, New Orleans, "and we average about nine months to the shuttle. On every shuttle that is given out the number of the loom is stamped in the shuttle, with the date it is put in. Stamping the loom number in the shuttle eliminates the possibility of fixers swapping shuttles from loom to loom, etc. We have a record for each loom, and the second hand has to see, on the same day, that the shuttle is put in right. We do not put in so many shuttles that he can't see to it right away. I believe we have cut down our shuttles considerably by applying that system. We used persimmon shuttles a good many years ago, but are now using dogwood altogether. I believe the ordinary life of a dogwood shuttle is fully 50 per cent longer than persimmon. We have not used persimmon shuttles in years."

There's a Difference in Fixers.

"Do you find a variation in the number of shuttles used on different sections, by different fixers?" asked

D. S. Cook, Chairman, Ala.-Miss.-La. Division.

Mr. Cook. "Does your inspection tend to equalize that?"

"Oh, yes, we find a big difference between fixers," replied Mr. Ryckman. "The only thing the inspection does is to pick out the bum fixers, and if they cannot improve after being instructed, then we get somebody else. We also have a kind of competition between the fixers to see who uses the smallest number of shuttles."

Mr. Cook reported that on 1,000 looms, he uses approximately 1,200 shuttles per year.

Chairman Howarth pointed out that in decreasing the number of shuttles used per loom, a saving is made not only in the cost of the shuttles but as well in production and quality of the cloth, pointing out how inferior shuttles and difficulty in operating them

definitely affects these two latter factors.

Leslie E. Lane, assistant superintendent, Indian Head Mills, Cordova, Ala., reported an average of about 11 months' life per shuttle. The loom fixers mark the number of the loom, and Mr. Lane has a shuttle book in which is kept a record of the date, etc. When a shuttle is put in, it is inspected first by the second hand, and later by the overseer.

A record on wide looms was reported by W. L. Phillips, who is now superintendent of the Strowd-Holcombe Textile Mills, Birmingham, Ala. He said on 90- and 100-inch looms, at a previous location, he averaged about 2½ dogwood shuttles per loom per year. Mr. Howarth pointed out that the width of the loom definitely affects the life of the shuttle, explaining that he finds that on his narrow looms the shuttles last longer than on the wider ones, adding that in his opinion the dogwood shuttle will outlast the persimmon.

N. G. Hardie, superintendent, Oconee Mills Co., Westminster, S. C., asked for figures on fancy work. Howard L. Smith, of the Draper Corporation, answered saying he had recently visited a mill making broadcloth, 128 sley, 50s yarn, where the shuttle consumption was about 800 shuttles per year on 600 looms, using dogwood shuttles; this including some dobby work.

Z. H. Mangum, general superintendent, Avondale Mills, was called upon, and two of his overseers of weaving reported, one stating 1,100 shuttles per year on 968 looms; the other 1,800 shuttles on 1,400 looms.

In response to an inquiry from Mr. Howarth, it developed that about half of the men present use brass eye shuttles and half the cast-iron eye, with some using both.

Types of Loom Let-Offs

The next question asked, "What is the best let-off to control the width of the cloth? Do you find any difference in your let-off when the beam is about three-quarters empty? What percentage of variation in the width of the cloth when the warp is full, and one-quarter full, if any?"

D. F. Poole, overseer of weaving, Pepperell Mfg. Co., Opelika, Ala., here read the prepared report of Homer M. Carter, superintendent, who was not present, which stated, "Our looms are equipped with the Draper Roper let-off. We consider this the best let-off for controlling the width of the cloth. If this let-off is set up properly on the full beam there will be very little variation in the width of the cloth from full to empty beam. It has a motion which is supposed to compensate for the fullness of the beam and thereby regulate the letting off of the warp. We have found as much as ⅜-inch variation on 39-inch finished goods. This variation was due to the size of rolls run on the looms or to the let-off not being set up properly."

"We know if a let-off is watched there will be very little change in the width of the cloth," said Mr. Howarth, "but some have to be watched a little more carefully than others." He asked how many were using the Roper type of let-off and several replied affirmatively, with none reporting the use of the Bartlett type.

Mr. Parrott, of the Strowd-Holcombe mill, said they found no variation with the Roper type. "We have both the Roper and the Bartlett," said Mr. Ryckman, "and we find there is no doubt that the Roper is far superior; it is really an automatic let-off. If it is correctly set it is hardly possible to get variation. I suppose there is some variation but we haven't been able to check it. Our cloth runs practically uniform from the full to empty beam. On the Bartlett we have to regulate the friction in order to keep our widths uniform. I suppose on the Roper it is influenced a great deal by the fact that we have a high sand roll and a low sand roll on the Bartlett. * * * I believe the Roper is fool-proof and automatic."

"I think the greatest variation comes in wide goods," commented Mr. Howarth, "from 60 inches and up, and where it is 'sleazy'." He referred to a 48x44 construction, where the contraction from the reed to the fell of the cloth is 4½ inches, where he found a variation in from five to eight yards in a new roll. He said, however, this was not necessarily the fault of the let-off, but probably attributable to a high sand roll. "We have the Roper let-off on all looms over 50 inches, and still have the Bartlett on the narrow looms. We have changed a great many from the Bartlett to the Roper. We had 110 looms that had the friction, and put them on the Roper."

Twine Harness and Steel Heddles

"What difference do you find in the running of work with steel heddles against twine harness, if any? What is the difference in the upkeep of steel heddles and twine harness? What eats up cotton and twine harness? Why do cotton and twine harness always break near the eye?" This was the next question, which provoked some interesting discussion.

J. T. Phillips, superintendent, Buck Creek Mills, Siluria, Ala., was the first to report on this question. He said he had made some breaking strength tests on cotton twine harness, by taking the eye with about two inches of harness twine on each side and breaking it in a grab test machine; he reported that practically every one of the harness broke at the eye. Furthermore, he said, practically all of the breaks come in the loop, and he added that he had found as much as eight pounds difference in the strength of twine harness, taking old as well as new material.

He told further of an incident occurring with a man handling rat exterminator. He asked this "Professor of Ratology" what caused the rats to eat the harness, and, after examining some of his harness in a laboratory, the man reported that the harness contained paraffin, and that this attracted the rats.

"We formerly used twine harness, but have changed over to steel harness," reported Page Enloe, asst. supt., W. A. Handley Mfg. Co., Roanoke, Ala. "We do not have any trouble except the slats break on the heavy stuff. The replacement on steel harness is very small, but on our heavy looms, on drills, twills, etc., I have not been able to find a steel harness that will work. On our numbered duck we use twine, and on the lighter work we use the steel

harness. On the heavy work we cannot get a steel harness that will go in the loom."

W. T. Dupre, overseer of weaving, Indian Head Mills, Cordova, Ala., reported next on the harness question, stating that "we have forty looms on steel heddles, and I can tell but mighty little difference. The only thing was that with the steel heddles we have more straps to break, but as far as the weaving and the finish of the cloth is concerned, I cannot tell any difference."

"In the last two years we have changed from cotton to steel harness," reported Mr. Schwartz, "and these were put on in opposition to a man who was at that time connected with us, and who without a doubt is a dean of textiles. His point was that the steel heddles are too stiff and rigid and do not yield sufficiently."

"I don't think there is any question about that," said Mr. Howarth. "If I want to make a nice, fine piece of goods, I use a cotton harness, but I use the steel harness on everything I can use it on. I do not use it on a sateen or a twill over 60 inches, because the weight is there and the weight tears the strapping all to pieces, and I believe I would get a bigger end breakage." Mr. Howarth told of going recently to a mill that was having difficulty with twine harness breaking out at the bottom of the eye, and that they had turned some of them upside down. The reason, as he explained it, was that they had the whip roll as high as possible, and the top shade was loose all the time and the bottom shade was as tight as a fiddle string, and that sawed right into the top of the bottom eye.

Size Doesn't Eat Harness.

With regard to the possibility of the size eating the harness, Mr. Howarth expressed doubt. He said the twine harness is made of the same material as the yarn, and that if the size ate the harness it should likewise affect the yarn. Furthermore, he said, he did not believe any reputable starch manufacturer would put any ingredient in starch which would have this effect. He pointed out that while thin boiling starch is "acid-treated," it is neutralized by the time it gets to the yarn, reporting litmus paper tests he had made which showed starch to contain very little, if any, of an acid condition.

"We use steel heddles altogether," reported Mr. McFarland, of the Florence Cotton Mills, Florence, Ala. "I changed over about five years ago. There is a difference both ways: the cotton harness, when new, will run better than the steel, but after they have become old the steel harness will run better. I have been on them for five years, day and night, and am replacing them now."

J. A. Edmunds, superintendent, Avondale Mills, Pell City, Ala., here caused some amusement by stating that the average life of his steel heddles is 470 *years*. In explaining this, Mr. Edmunds pointed out that he is equipped with the old-style steel heddle—a combination harness and drop wire—which is very seldom used at the present. He said his equipment calls for about 1,500,000 of these, and that his replacement averages about 3,120 a year—giving the figure he named. Mr. Ryckman, at Lane, also uses this old-style combination drop wire and harness, terming it, in his opinion, "the best harness that was ever gotten out." However, he said, "I don't know of but two mills that are running these, and they are Lane and Pell City—the rest of them got rid of them." They don't wear out, however, he said, and the replacements are caused by weavers breaking them out.

It was made clear that the "steel heddle" or steel harness referred to in the remainder of the discussion referred to the newer type of steel equipment, and not this type mentioned by Mr. Edmunds.

"On fine work I think cotton harness runs better, and on heavy work I think the steel harness would be the best," commented Mr. Parrott of the Strowd-Holcombe mill.

"I have had a great deal of experience with cotton and steel harness," said D. F. Poole, who is now overseer of weaving at the Pepperell Mfg. Co., Opelika, Ala., "and the impression that seems to prevail here is all wrong. Steel harness will weave the finest to the coarsest goods just as good or better than the cotton harness. You can't take a heddle that is made for osnaburg and run fine goods with it—you have to have the right heddle—but steel heddle will run any goods that cotton harness will run, equally as well, and more economically.

"The reason cotton harness breaks at the eye is the continual sawing at the eye. You take anything made out of cotton and something else made out of steel, and common sense will tell you that the steel will wear longer.

"Furthermore, where you are constantly changing, with steel harness you do not have to buy new harness for every style of goods."

At this point, Mr. Howarth added that the upkeep on steel harness is considerably cheaper, and while it might not last for the 470 years mentioned by Mr. Edmunds, it will last a long time.

(*Continued on page* 904.)

IN this report overseers of weaving and superintendents of weaving will find much practical food for thought. Perhaps the subjects covered at the Birmingham meeting may not represent any brand new thoughts, and the discussion may not present any radically different methods. However, any reader concerned with slashing and weaving is earnestly urged to study these discussions as a means of becoming informed as to the current thought and experience of the men who were present regarding various details of these two departments.

By the same token, those readers more directly interested in carding and spinning can spend a profitable half-hour or so in absorbing the report of the discussion at the Henderson meeting of the Southern Textile Association on these departments, this report appearing upon another page of this issue.—The Editor.

The Lubrication of Cotton Mill Machinery

By N. M. Aycock

EFFICIENT lubrication demands the most suitable product whether it is a grease or an oil, and the most vital factor to be considered in the selection of lubricants is the bearing they will have on power consumption, which when brought to a minimum means that a reduction in maintenance cost is automatically brought about.

Viscosity or Body.

We will refer to different oils giving their viscosity or body in seconds at 100 degrees Fahr.

Viscosity referred to is read on a Saybolt universal viscosimeter. This device has a cylinder supported in a bath of oil with means provided for heating. The cylinder is fitted at the bottom with an outlet tube. The lower end of outlet tube is enclosed by a larger tube in which a cork is placed which holds the oil in the cylinder. A thermometer is suspended in the oil so that temperatures can be read, then heat applied to bath. A flask being graduated at 60 c.c. is placed directly under the outlet tube, when the oil in cylinder has reached a temperature of 100 degrees Fahr. A stop watch is started and the cork is removed allowing the oil to run into flask when the oil level in flask reaches the 60 c.c. mark, the watch is stopped and the number of seconds required for the flask to fill to the graduation is the seconds viscosity at 100 degrees Fahr. Viscosities at various temperatures can be taken in the same manner.

THIS discussion represents an abstract of a paper on this subject presented by Mr. Aycock at the recent Henderson, N. C., meeting of the Eastern Carolina Division of the Southern Textile Association.

While most of the paper recommends certain viscosities of lubricant based on the Saybolt test, Mr. Aycock clearly explains the origin of this method of determination, and any mill man interested can determine for himself with the clear explanation given of how these are arrived at. In addition there is considerable food for thought in the other discussions in this paper.

We hope soon to present a more detailed article on mill equipment lubrication, giving oiling schedules,

Opening Room.

In this department practically all lubrication can be taken care of with a lubricating oil having a viscosity of 300 seconds at 100 degrees Fahr. Where the machinery is fitted for grease lubrication a grease having a consistency similar to 00 cup grease, which is the lowest of the set greases, may be used.

Due to this department usually being located quite a distance from the remainder of the mill machinery, a regular inspection should be made to see that none of the oil holes have become stopped up with dust or lint.

Pickers.

The pickers are high speed machines and they must be watched to see that none of the oil holes are plugged up with dust and lint. More trouble is caused from stoppage of oil holes on these machines than at any other point throughout the entire mill.

Most pickers are fitted with ball bearings on the beater and fan shafts and a 00 consistency grease is usually applied and will give good results. Although where the ball bearings are oil tight an extra heavy grade of highly refined and filtered oil may be used and will give better lubrication over a longer period of time, due to not having the usual amount of brown deposit that is found in the ball races after they have been lubricated with grease for a long period.

When the brown deposit from the continued use of grease in any bearing is allowed to accumulate it will increase power consumption. This deposit should be cleaned out periodically.

All other bearing lubrication in the picker room may be taken care of with an oil having a viscosity of 300 seconds at 100°. The gear boxes should be lubricated with a high grade gear lubricant.

Due to the much higher pressures encountered between gear teeth than in bearings, a different lubricant must be used. The action encountered in gears is a rolling motion, whereas in a bearing the motion is of a continuous sliding nature. Therefore, an entirely different product is required for lubrication of gears. If an adhesive lubricant was used for bearing lubrication it would greatly increase power consumption which is not true when applied to gears. A good gear lubricant must possess adhesive and cohesive qualities. The adhesive nature making it cling to the gear teeth and the cohesiveness prevents channeling, assuring continued supply of lubricant.

Cards.

All lubrication on the cards can be taken care of with an oil having a viscosity of 300 seconds at 100 degrees F. except the lubrication of cylinder journals and comb boxes. One of the best practices is to pack the cylinder journal bearings with a 00 grease and then at the regular oiling period apply the 300 seconds oil. The grease is used, acting as a retardant to the oil and as a safeguard against the possibility of the oiler missing the bearing at the regular oiling period. Where the cylinder journals are ring oiled, they should be lubricated with the 300 seconds viscosity oil.

For lubrication of comb boxes a highly refined mineral oil having a viscosity of 300 seconds at 100 degrees F. is recommended.

It is usually found that where an oil works out of the comb boxes that the bearings have worn excessively. When this difficulty is experienced the bearings should be replaced. If the bearings are not replaced a heavier bodied oil must be used. It has often been found necessary to resort to oils having viscosities of 750 to 1500 seconds. The use of these heavier bodied oils increases the operating temperatures and power consumption.

It has been found that high operating temperatures of comb boxes are directly attributed to the use of too small a band, when a very small band is used it must be made very tight to keep it from slipping and this causes undue pressure on the bearing. A large band that will wedge in the groove of the pulley so that it can be run slack will give much better results, reducing operating temperature as well as breakage. When the bearings heat up, due to the cause mentioned, the power consumption goes up with the bearing temperature.

The oiling of the coiler head is very important. Most of the oil holes are hidden under the cover and are a temptation for the oiler to miss. A good practice to guard against missing these is to have the operators clean the heads thoroughly on Saturday when shutting down. Then on Monday morning before starting up the machines, have the operators lubricate them with filtered oil having a viscosity of 300 seconds at 100 degrees Fahr.

Drawing Frames.

No serious difficulties are encountered in the lubrication of the drawing frames. An oil of 300 seconds viscosity for lubrication of all parts except the top rolls and roller stands, and for these an oil having a viscosity of 750 seconds at 100 degrees F. is found most suitable. One thing that must be guarded against in lubricating top rolls is the use of an excess quantity of oil which will stain. The oiler can be trained to apply the correct amount of oil, thus reducing the possibility of staining.

Slubbers, Intermediates and Speeders.

An oil having a viscosity of 300 seconds at 100 degrees Fahr. is best suited for all fast and slow moving parts except on spindles, bolsters, roller stands and top rolls.

For lubrication of spindles where no excessive wear is present an oil having a viscosity of 60 seconds at 100 degrees Fahr. is recommended and where spindles are worn a heavier oil must be used. At times it has been found necessary to resort to an oil having a viscosity of 200 seconds before the spindles would run without wabble. When an oil heavier than 200 seconds is required to stop wabble, the worn parts should be replaced, then the lighter oil may again be put in use.

When wear is present and a heavier oil must be used, the power consumption is very materially increased. Therefore, it is advantageous at all times to keep spindles and bolsters in an excellent state of maintenance and take advantage of power savings.

THE author of this paper is correct in giving the following advice: "I would recommend that when purchasing lubricants, only the highest grade products be considered. When buying almost any commodity, we are almost all influenced by price, but when we take into consideration that the lowest cost of operating and maintaining any manufacturing plant is the cost of lubricants, in reality the use of higher quality of lubricating products will be more than compensated for in a reduction of maintenance and power costs."

Roller stands and top rolls are best lubricated with a highly filtered mineral oil having a viscosity of 750 seconds. Great care must be exercised in the lubrication of these parts to eliminate the possibility of staining.

Spinning Room.

In this department approximately 60 to 65 per cent of the total electric power used by cotton mills is consumed. Therefore, it has always been desirable to reduce the amount of power used for driving spindles.

An oil having a viscosity of 750 to 1250 seconds at 100 degrees F. has shown best results for lubrication of roll stands, top rolls and saddles. When a liquid grease is used, the soap stock in the grease remains in the saddle wicks, stopping them up so they soon lose their conductivity. While by using a very highly refined, filtered heavy mineral oil that will not leave a deposit in the wicks and therefore give much better lubrication over a longer period of time.

A vast amount of power is wasted through wicks being stopped up. When these wicks are all plugged up, the lubricant applied runs off the end of saddle without getting to the bearings which in most instances are cast iron saddles as well as cast iron top rolls and when the two metals come together power consumption is increased. Correct maintenance and efficient lubricants must be used to guard against these power losses.

Weave Room.

The looms present some lubricating difficulties, due in most part to the design of the bearings on many of the old type looms, having no provision made to retain or feed lubricants to bearings. The largest proportion of the maintenance cost of a cotton mill is in the weaving room, and due to a very small percentage of the looms being fitted with oiling devices, makes it necessary that very accurate lubricating practices be instituted in almost every mill. The lack of proper lubrication is what builds up the maintenance costs. High grade oils only should be used. They should be intelligently applied. This requires

(*Continued on page* 950.)

CURRENT TOPICS

This Decade in Retrospect

CARE seems to have been taken to avoid use of the word "revolution" in the elaborate report, brought forth as the result of a year's study by skilled economists working under a national committee appointed by Herbert Hoover just before leaving the U. S. Department of Commerce, on "Recent Economic Changes in the United States."

It is probably the best study of its inclusive kind ever made in this country. The report partakes of being an economic summing up of the remarkable post-war decade now drawing to a close. The changes that have occurred are in some respects the most striking ever noted for a like period but they are not found to be revolutionary in the sense of ones brought about initially and more slowly by what is known as industrialization.

What appears to be the outstanding mark of the decade in this country is an economic acceleration in many respects without precedent. "Per capita productivity was nearly 60 per cent greater than in the late 90s and in manufacturing it increased 35 per cent from 1922 to 1925 and farm workers' productivity gained at a rate probably never before equalled." Prices went down and wages up, with the result that the investigators say that the purchasing power of American wages rose 2.1 per cent a year between 1922 and 1925.

> The talent of success is nothing more than doing what you can do well, and doing well whatever you do without thought of fame. If it comes at all it will come because it is deserved, not because it is sought after.—*Longfellow.*

This acceleration and its benefits were not uniformly distributed, say the investigators; some sections, groups and industries gained much more than others; some were helped little, if at all. Those making the study find it difficult to state the reasons for the change, for all the ponderable factors entering into it—such as invention and advertising—were as prominent during other periods. Nor do they attempt to predict that the rate of acceleration will continue; they are not sure that it is still maintained. There is little of prophesy in the report.

But there is much material for every person formulating opinions as to what is going to happen. Better still, the report is a sort of pattern for outlining and devising measures looking to greater conscious control, than has been exercised in the past, of economic currents. Since it was initiated by him and is in line with his rather advanced economic philosophy, the report is apt to be a basis for many things pursued by Herbert Hoover as President.

Every person concerned with economic tendencies —and who isn't?—should make a careful study of the report, which is now available in two published volumes. Similar reports have been put forth in Germany and Great Britain. The aim of all three is to clarify and stimulate sound thought as to the somewhat new world that has come into existence in recent years and, more particularly, as to the still newer one which appears to be evolving.

The report bears quite pertinently on the future of business and industry.

Tariff Legislation Tendencies

THE tariff bill framed, as the result of four months of work, by the Ways and Means Committee of the United States House of Representatives, seems to have conformed fairly well to the Administration's desire that the pending revision be a "limited" one. In fact, the committee held unusually well to its own program of "readjustment," as against the customary rule of wholesale revising.

It is by no means certain that anything like the bill framed by the committee will eventuate into a new tariff law. The odds probably are against this. Whatever the House does about it, the Senate is likely to tear to pieces many parts of the bill, which, however, may be saved in fair order in the final conference committee negotiations. It is not unlikely that the handling of the tariff bill will be complicated by efforts to attach to it the debenture plan which the Senate adopted as a part of the farm relief bill.

It seemed when this was written that the sugar schedule will be the feature of greatest strife anent new duties. In this schedule one of the few radical changes was embodied in the bill framed by the House committee. The effective duty on sugar would be increased from 1.76 cents to 2.4 cents a pound, the last being tantamount to more than 100 per cent ad valorem on sugar at current prices. This seems to be a pretty high levy for the protection of facilities, which despite high duties in the past, now account for only about one out of every six pounds of sugar consumed in the country. The higher duty probably would prove to be only what the present duty is, and that is in most part a bounty on sugar production in the country's tropical possessions, which as to sugar need no protection.

Logic becomes equally topsy-turvy when applied to the proposed increase of duty on wool. Domestic production of this material is only about one-half of consumption, which undoubtedly has been curbed, with

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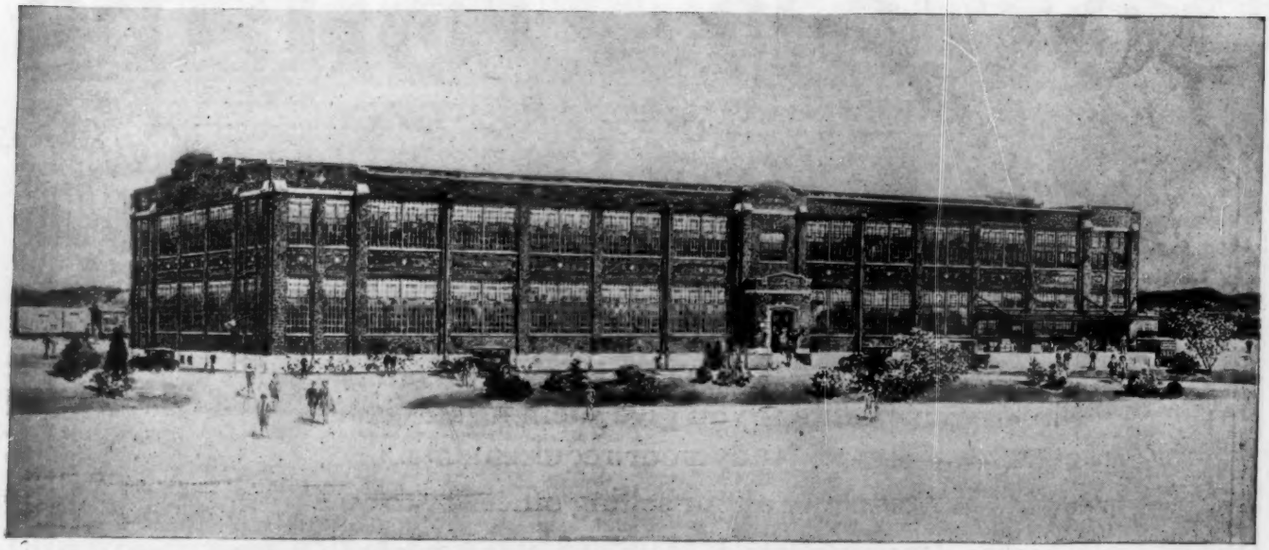
New Draper Corporation Warehouse at Spartanburg



The above illustration shows the new warehouse being erected at Spartanburg, S. C., by the Draper Corporation, of Hopedale, Mass., for providing better and speedier service in shipment of repair parts and replacements on Draper machinery, especially to the mills in the Carolinas.

The present Atlanta warehouse, with 30,000 square feet of floor space, will be continued, and enlarged as the need develops. The Spartanburg warehouse will double the company's storage capacity and facilities for serving the southern industry.

The site of the Spartanburg warehouse is about 2½ miles from the center of the city, near Hayne, S. C., and comprises 30 acres in two parcels on either side of the main line of the Southern railroad. The site is also served by the P. & N., and is on the main Spartanburg-Greenville highway. The building will be 260x100 feet, two-story, of mill construction, with steel frame and monitor roof; concrete foundation and red brick walls with Indiana limestone trimmings. The building will have offices and fully equipped storage bins and racks for repair parts and replacements on all Draper machines. Sidetracks for the two railroads, and loading platforms for trucks are included. Actinic glass is used throughout. It is planned to open this new service depot on October 1st or before. J. E. Sirrine & Company are the engineers, and Fiske-Carter Construction Company are the contractors.

bad effect on wool manufacturing, by the present duty.

The House committee seems to have been moved, with respect to several "readjustments," by a rather new concept of tariffs. It is of tariffs as an economic equalizer. A declared aim of the bill is the promoting of shifts from industries that have grown beyond domestic need to ones whose outputs still are below domestic consumption. In view of the fact that the country's industries as a whole are on a surplus-producing basis, it is difficult to see how this aim, if attained, can be of much enduring help.

The committee gave cotton manufacturing only a part of what was asked. The bill puts the duties on an ad valorem basis, with no specific rates as in the present law. The primary rates are on a sliding scale, which for yarns and cloths end at number 90. On higher-count goods, the new rates would be 32 cents for unbleached yarns, 37 per cent for bleached and dyed yarns, 41½ per cent for unbleached cloth and 47½ per cent for bleached and dyed cloth. It was asked at the hearings that the sliding scale progression have no end. Tire and cord fabric, now under a 25 per cent duty, would go on the free list.

The suggestion that high duties be put on jute and jute manufactures as a protection for cotton and cotton goods did not make appeal to the committee. The fight for this probably will be renewed on the floor of one of the Houses of Congress.

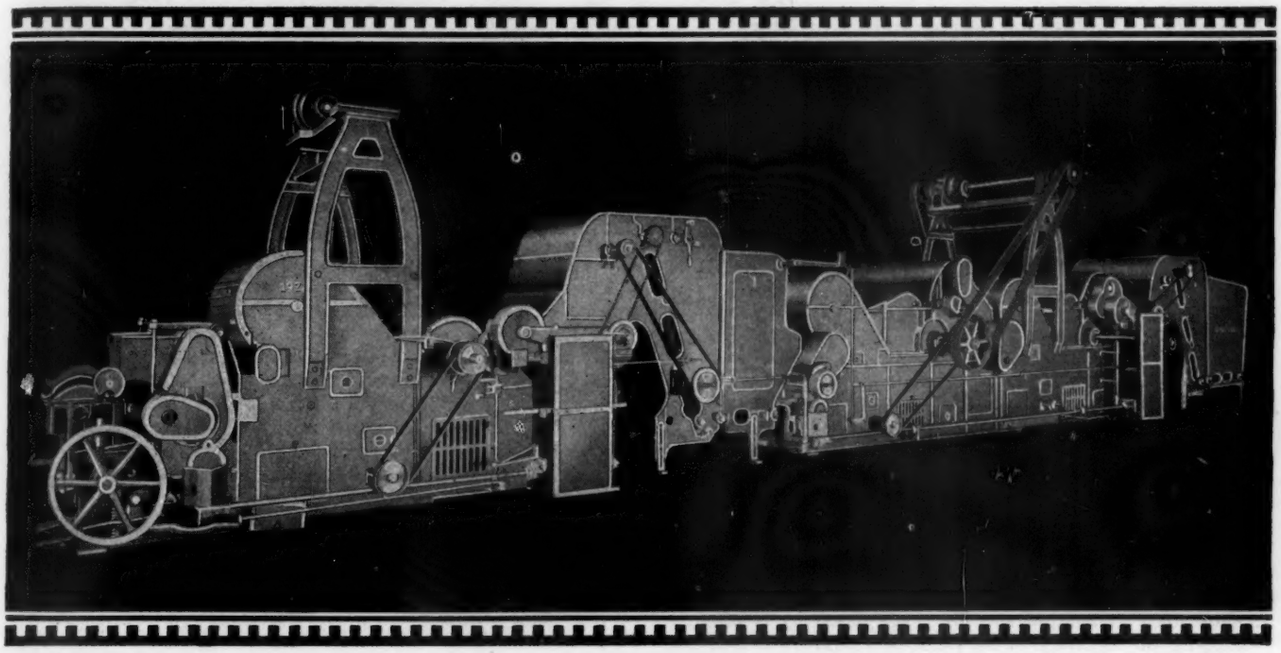
One or both of the Houses may toss aside the recommendations of the committee and write a new bill, in which case one of two opposing results will be probable: There may be a general scaling downward of duties on manufactures or there may be a sky-high hoisting of all rates.

A tendency that is pronounced in the bill is towards passing on to the President and Tariff Commission and the Treasury greater measures of control over tariffs, and another is in the direction of domestic bases for fixing and assessing duties. The compelling force of circumstances is apt to carry these tendencies through to the finished act. The tariff has become too complex for handling in detail by Congress and it has been demonstrated that foreign value bases are faulty and often wholly impracticable in either measuring or assessing duties.

Spartanburg Warehouse Opened by N. Y. & N. J. Lubricant Company.

The N. Y. & N. J. Lubricant Company, 292 Madison Avenue, New York City, manufacturers of Non-fluid oil, have established a warehouse at 191 Wofford Street, Spartanburg, S. C. An ample stock of Non-fluid oil will be carried at this point, with deliveries made by motor freight and direct mail routes. In addition to this new warehouse at Spartanburg, the company maintains warehouses at Charlotte, N. C., Greenville, S. C.; Atlanta, Ga., and New Orleans, La.

Better Laps - Lower Costs



One process picker with synchronized control

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What the Southern Mills are Doing

AN addition will be erected to the main mill building of the West Boylston Mfg. Company, Montgomery, Ala., the contract having been let to the West Point Iron Works, West Point, Ga. The new portion will be two-stories, 134 x 42 feet, added to the present one-story portion, and a three-story elevator tower. Also 15 village cottages, totalling 80 rooms, will be erected. Robert & Company, Atlanta, Ga., are the engineers.

The Pepperell Mfg. Co., Opelika, Ala., have installed a Breton Minerol process for treating raw cotton with lubricant, furnished by the Borne Scrymser Company, New York City. The Avondale Mills, Birmingham, Ala., have also placed order for additional oil spraying equipment, this being the second unit to be installed by this mill organization.

The motors and auxiliary electric equipment for the Bemis Bros., Bag Co., mill at Talladega, Ala., have been purchased from the Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Goodyear Tire and Rubber Company, of Akron, Ohio, during the past month, made two announcements of interest in connection with southern textile manufacturing holdings. The first announcement was to the effect that a 50,000 spindle mill for the manufacturing tire cord fabric will be erected at Rockmart, Ga.; and the other announcement was to the effect that the Goodyear Company has purchased the plant and holdings of the American Textile Co., Atco, near Cartersville, Ga., and will immediately change the product of this mill from drills, sheetings, etc., to tire cord fabric. As previously announced the Goodyear Company is already enlarging the capacity of its plant at Cedartown, Ga., the Goodyear-Clearwater Mills.

The plant at Rockmart will consist of a main building, three stories high. The central portion will be 433 x 144 feet, and the two end portions will be 75 x 144 feet each, together with entrance, toilet and locker-rooms, towers, etc., comprising a floor area of 221,000 square feet; a weaving building, one story, 147 x 199 feet; a cotton storage, opener and picked building, four stories, 219 x 103 feet; and steam plant building, one-story high, 45 x 38 feet. The village will consist of 392 houses, totaling 1451 rooms. Contract for the construction of the manufacturing buildings has been let to A. K. Adams & Company of Atlanta, and contract for the houses in the village has been let to Batson Cook Co., West Point, Ga. Robert & Company, Bona Allen Building, Atlanta, Ga., are engineers for all of the Goodyear work as announced.

Clinton C. Slusser, vice-president and general manager of the Goodyear Company announces that in connection with changing the product of the Atco plant to cord tire fabric, that considerable enlargement of the mill will be made in the near future.

Canton Cotton Mills, Canton, Ga., have placed orders for the Breton Minerol process for spraying oil on raw stock, with the Borne Scrymser Company of New York City. The Summerville Cotton Mills, Summerville, Ga., have likewise ordered equipment of this character for this purpose.

J. E. Sirrine & Co., Greenville, S. C., have announced plans for the erection of 125 additional cottages in the village of the Southern Brighton Mills, Shannon, Ga., to provide for the recently announced expansion of the mill's manufacturing capacity.

The Harris Cotton Mills, Inc., has been organized to operate the Eatonton Cotton Mills at Eatonton, Ga., which has been idle for five years.

Muscogee Mfg. Co., Columbus, Ga., has purchased two additional units of one-process picking from the Saco-Lowell Shops.

Twelve additional Saco-Lowell cards have been installed at the Highland Mills, Griffin, Ga.

The Mary-Leila Cotton Mills, Greensboro, Ga., have installed two units of Saco-Lowell one-process picking.

Batson-Cook Company, West Point, Ga., has been awarded the contract for a five-story warehouse to be built at the Lanett Bleachery and Dyeworks, Lanett, Ala. It will be 60 x 125 feet. A small addition is also being made to the boiler plant. J. E. Sirrine & Co., Greenville, S. C., are the engineers.

Mandeville Mills, Carrollton, Ga., are changing Mill No. 2 from steam power to mechanical drive, and the equipment for the electrification of their plant has been purchased from the Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Through the office of Lockwood Greene, Engineers, Inc., Spartanburg, S. C., contract for complete light and power installation in the new weave mill at Drayton Mills, Spartanburg, S. C., has been let to J. M. Clayton Company, of Atlanta, Ga. The new weave building was designed and is being erected under the supervision of Lockwood Greene, Engineers, Inc.

Announcement is made that a 16,000 spindle addition will be made to Mill No. 3, Republic Cotton Mills, Great Falls, S. C., for the purpose of manufacturing yarns for the weaving mills. Also 50 new residences will be erected in the village. J. E. Sirrine & Co., Greenville, S. C., are the engineers.

The Lund Company, Inc., Rock Hill, S. C., is installing several wide Jacquard looms, transferred from the Massachusetts plant of the company.

Kendall Mills, Inc., Edgefield, S. C., have completed the erection of 25 new dwellings in the village, and a like number are now under process of construction.

An addition will be erected to the Southern Pile Fabric Co., Greenville, S. C., by the Gallivan Construction Company. The building will be 96 x 107 feet, one story, and will double the capacity of the plant.

It is reported that 50 additional looms will be installed in the Dilling Cotton Mill, Kings Mountain, N. C., in an addition to be erected for this purpose.

New humidification equipment will be installed at the Erwin Cotton Mills Co., Coolemee, N. C., by the Bahnson Co., Winston-Salem, N. C.

W. B. Cole, president and treasurer of the Hannah Pickett Mills, Rockingham, N. C., has acquired the properties of the Leak Mfg. Co., Rockingham, N. C. The mill is equipped with 14,400 spindles and 400 Hopedale automatic looms, with complete dyeing and finishing equipment.

Gordon Mills, Inc., North Wilkesboro, N. C., have been organized to take over the plant of the Yadkin Cotton Mills, Roaring River, N. C., which was sold at public auction sometime ago.

Statesville Cotton Mills, Statesville, N. C., propose to expend approximately $100,000 in building and equipment for the manufacture of cotton velour and plush. This will involve the installation of looms for this purpose it is reported.

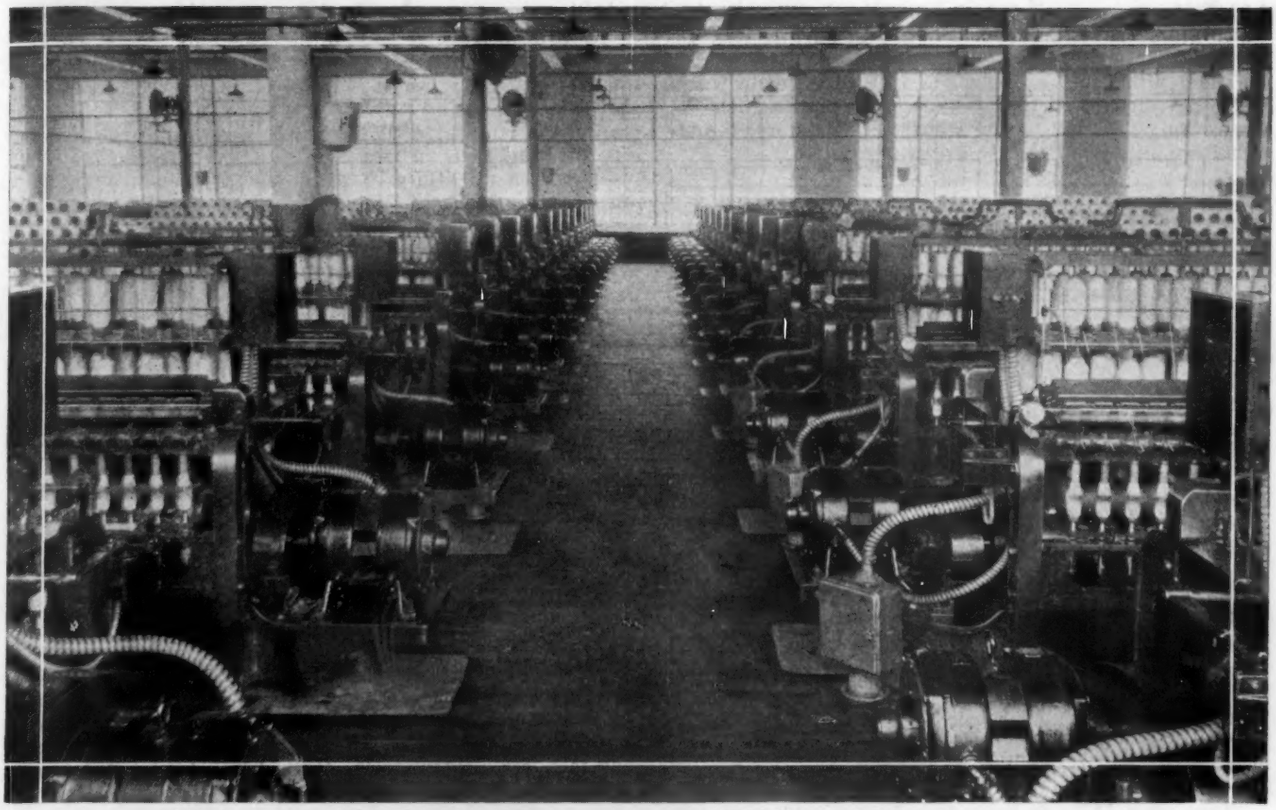
The Beacon Mfg. Company, Swannanoa, N. C., are erecting 42 additional dwellings in the village, and are also doing extensive paving and other improvement work.

The new building of the Greenville Cotton Mills, Inc., Greenville, N. C., will be 110 x 80 feet. J. E. Sirrine & Co., Greenville, S. C., are the engineers. The building will be equipped with twisters, spoolers and warping equipment.

Brookside Mills, Knoxville, Tenn., have purchased two single retort underfeed stokers from the Westinghouse Elec-

S. T. A. Meeting in Asheville July 5th and 6th

THE annual convention of the Southern Textile Association will be held at the Kenilworth Inn, Asheville, N. C., on Friday and Saturday, July 5th and 6th. In making the announcement Secretary Joseph C. Cobb states that an interesting program for the sessions and for the entertainment features is being arranged.



H&B SPINNING FRAMES

Maximum Production-Long Life Low Operating Cost

The H & B Spinning Frame has set a standard for finish and excellency of workmanship for over thirty years. Originally designed to embody the most outstanding improvements in machine construction, it has been possible to readily adopt new features to suit changed conditions.

The framework being substantially constructed, and all parts accurately machined, increased spindle speeds are always obtainable without vibration.

Like all H & B machinery, our spinning frames are made from the highest-grade materials, for unnumbered years of service.

The small details, so essential to perfect spinning, are, with us, paramount construction factors, resulting in silent, smooth-running frames.

Perfectly Balanced Spindles, made from the finest steel; specially tempered, Extra-Hardened Steel Rings, highly polished and accurately gauged, and Steel Fluted Rolls, machined on tools of our own design to insure close working limits, contribute largely to the outstanding results obtainable with H & B Spinning Frames.

H & B AMERICAN MACHINE COMPANY

PAWTUCKET, R. I.

Southern Office: **814 and 816 Atlanta Trust Co. Bldg., Atlanta, Ga.**

BUILDERS OF COTTON PREPARATORY AND SPINNING MACHINERY

tric & Mfg. Co., and two 500-h. p. Babcock & Wilcox boilers, which are being installed. Robert & Company, Atlanta, Ga. are the engineers.

The addition to the Shelbyville Mills, Shelbyville, Tenn., which is being erected by the Gallivan Construction Co., Greenville, S. C., will be 360 x 162 feet, one story. Additional equipment will be installed it is reported.

COTTON COMMENT

By H. & B. Beer--

New Orleans, May 18, 1929

THE last half of April having been favorable for the progress of the growing cotton crop, and as there was a falling off in the demand for cotton goods, the market experienced a substantial decline, but as the coming of May brought less favorable weather, low temperature and much rain, part of the late April decline was recovered, especially in spots which have ruled relatively stronger than contracts of late, due to a reported improvement in the demand, particularly for desirable grades, offerings of which are said to be light. Nevertheless, Middling, compared with one month ago, shows a loss of 37 points, old crop deliveries are about 56 to 77 points lower, most on July, May reflecting the apparent stronger position in spots, while new crop arrivals are about 72 to 83 points down.

ASSOCIATION OF COTTON TEXTILE MERCHANTS OF NEW YORK, APRIL STATISTICS.

Yards—	April, 1929	March, 1929	April, 1928
Production	283,878,000	297,944,000	286,005,000
Sales	202,520,000	358,333,000	335,117,000
Shipments	227,098,000	325,633,000	270,172,000
Stocks	352,091,000	345,311,000	418,427,000
Unfilled orders	430,298,000	504,876,000	362,044,000

Sales were 71.3 per cent of production; shipments 97.6 per cent of production. Stocks increased 2 per cent, and unfilled orders decreased 14.8 per cent.

BRITISH BOARD OF TRADE REPORT FOR APRIL

	This Year	Last Year
Exports of yarn, pounds	13,000,000	14,000,000
Exports of cloth, yards	349,000,000	315,000,000

CENSUS REPORT

U. S.— Bales—	This Season	Last Season
Consumption lint, April	631,710	524,765
Consumption linters, April	79,008	59,930
Consumption inc. linters, April	710,718	584,695
Consumption lint, 9 months	5,313,979	5,306,459
Consumption linters, 9 months	633,310	586,534
Consumption inc. linters, 9 months	5,947,289	5,892,993
Mill stocks, April 30th	1,606,832	1,507,599
Stocks in pub. stg., April 30th	2,523,574	2,919,178
Stocks in mills and pub. stg., Apl. 30	4,130,406	4,426,877
Active spindles during April	30,924,184	30,950,340

OTHER STATISTICS

May 17th— Bales	This Season	Last Season
In sight (marketed) since Aug. 1st	14,940,937	13,689,963
Exports from U. S. since Aug. 1st	7,500,322	6,801,618
Spinners takings since Aug. 1st	13,818,000	13,184,000
World's visible supply of American	3,471,392	3,954,509
Of other kinds	2,404,000	2,152,000
Of all kinds	5,875,392	6,106,509

Recently the Garside Bureau placed the world's consumption of American cotton, exclusive of linters, August to March inclusive, at 10,132,000 bales against 10,805,000 for corresponding period last season, but expects world consumption to run larger during the remainder of the season than after this time last season, estimating the total for the season at 15,250,000 to 15,350,000 against their figures of 15,500,000 for last season. Garside estimates the world's probable carry-over of American lint cotton at the close of next July at about 4,300,000 bales against his figures of 5,121,000 at the close of last season.

As to the new crop outlook, the consensus of opinion leans towards a large, perhaps a record acreage. Last year's acreage was 46,946,000 acres, of which 45,341,000 were picked. The largest acreage of the past was 48,730,000 acres in 1926, the record large crop year, of which 47,087,000 were picked.

So far this year private acreage estimates range from one per cent increase to about 5 per cent increase, averaging about 3.8 per cent increase. Sales of fertilizer tags are reported to have increased materially during April. Returns to Garside show tag sales, in terms of short tons of fertilizer, in nine principal cotton growing states, from August to April inclusive, amounted to 4,334,000 tons against 4,523,000 for the corresponding time last season. April sales were exceptionally heavy—1,120,000 tons against 731,000 in April last year.

Until of late there was apprehension regarding the recent drouthy conditions in west and northwest Texas and the want of general rain over the state, but these fears were dispelled by the coming of generous well distributed rains, breaking the drouth except in the extreme lower Rio Grande district, and providing needed moisture elsewhere in that important state. In fact there is now complaint of too much rain in parts of north and East Texas.

Elsewhere in the belt there has probably been too much wet weather, particularly in Oklahoma and Arkansas, and temperatures have been rather too low in parts of the northern belt. Dry, warm weather is wanted now in virtually all sections of the cotton region.

Because of the large acreage ideas, the good season in the soil, and indications for a liberal use of fertilizer (plant food), many in the trade have visions of a large crop, although planting is not quite finished yet. By reason of the expected comparatively small world's carry-over of American cotton at the close of next July, and because of world consumption of American promising to exceed 15,000,000 bales this season, exclusive of linters, there is apparent need for a moderately large American cotton for next season's requirements unless there should be a falling off in the trade demand next season. There are some unfavorable features in world trade and financial conditions, such as dear money throughout the world, particularly on the European Continent, in the Balkans and in South America, and to a lesser extent in the U. S. There is almost demoralization in the grain markets throughout the world because of large surplus stocks of wheat in producing countries, especially in America and Canada, and there has been extensive damage to the fruit crop in the Pacific States. All of which may affect the purchasing power of the masses in certain sections of the universe. However, so far as the international monetary situation is concerned, developments may be for the better in the future, in which event the foreign demand for cotton may not be affected to any extent.

New England Mill Situation.

May 16th, 1929

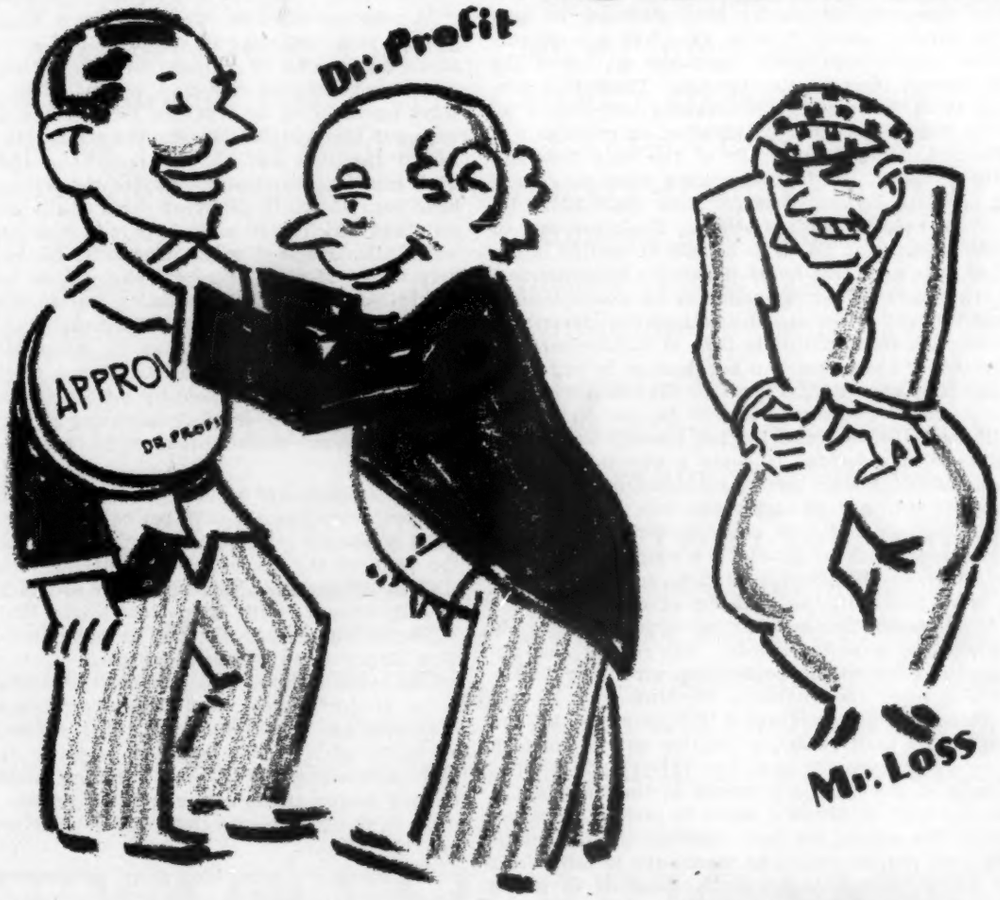
THE cotton mills of New England that have survived the long depression have had the most active four months in three or four years. They are still comfortably well employed and in the fine goods division bid fair to be occupied well through the summer as considerable Fall business has come forward in the past three or four weeks. Profits continue very close in most of the plants but as financial accommodation is not being granted freely to mills not showing earnings there is a stronger tendency noted to refrain from selling at a loss.

Competition is being forced wherever possible and the mills that are well equipped are making a strong effort to retain their place in the market. This was exemplified in the naming of Fall prices for ginghams by the Amoskeag Manufacturing Co. Spring prices were continued on dress ginghams, although the market anticipated an advance of at least ½ cent a yard. Staple ginghams were reduced to 10 cents a yard from 11½ cents and this was explained by the fact that it is the only eastern staple now made in large volume and although held at high prices last season competing southern lines were sold much under the asking price. The reduction was a restoration of what is called the market parity between eastern and southern staples of somewhat similar construction and character.

The company has booked a very substantial business on fancy flannels and cannot accept new deliveries to begin earlier than September. The business on plain white and solid color goods has not been as satisfactory, although it is stated that some very good orders are still on the book. The Amokeag is employing nearly 11,000 people running full

Morehead users bear Dr. Profit's stamp of approval and enjoy Mr. Loss' Disfavor

Morehead Back-to-Boiler SYSTEM

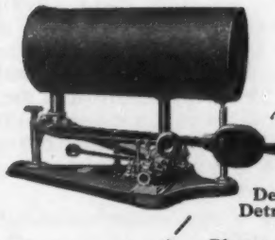


Faulty steam drainage and boiler feeding are avoidable and entirely unnecessary. A Morehead Back-to-Boiler System will increase the efficiency of your steam heating system or process apparatus . . . with a resulting influence on both quantity and quality of product.

1. ***Drains*** **all kinds of steam-heated apparatus . . .** ***thoroughly.***
2. ***Increases production*** **and** ***improves quality*** **of product.**
3. ***Feeds condensation*** **to boilers at** ***original high temperature.***
4. ***Retains temperature*** **above 212° . . . and** ***saves fuel.***

Read What One of Hundreds of Satisfied Users Has to Say:

"In eleven months the Morehead System has saved us fifty per cent on our coal bill and fifty per cent on our water bill . . . in other words, it has paid for itself in less than a year."



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MOREHEAD MANUFACTURING CO., Department C DETROIT, MICH.

tine which is a larger complement than has been employed for three or four years. The worsted division of the company is active and all the rayon product it makes is being absorbed in the market. It continues to be a factor in the carded yarn markets, especially with the insulating trades.

Mills in Maine have undergone a striking change in the past year and are now generally better conditioned than they have been for three or four years. The Pepperell Manufacturing Co., at Biddeford, Me., is well employed on a great variety of specialties and is reported to be making good progress in establishing its fine colored sheets in the markets. It recently introduced a Jacquered woven hem in colors and has been doing a very considerable business on the finer grades.

Interests connected with the power companies in Maine are large factors in the operations of mills that were formerly sold through the old firm of Bliss, Fabyan & Co. and are still sold by its successors. The York Manufacturing Co., of Saco, Me., has abandoned the manufacturing of ginghams and has about 600 looms employed on fancies in cotton and rayon. The Bates Manufacturing Co., producers of bedspreads and novelty colored fabrics, have had a most successful period, largely due to the handsome styling of the lines shown during the past five months. There is a general feeling in Maine toward discouraging restrictions on industries by legislation, excesive taxation or unionism.

New Bedford, Mass., the center of the very fine and fancy textile industry, has been operating more machinery and giving more employment than for some years past. Liquidation of some plants continues there. The machinery of the Sharp Manufacturing Co., is to be sold at auction in the early part of June as it was found impossible to induce new capital to bring about a reorganization or an assumption of the debts of the mill. The stockholders of the Dartmouth Manufacturing Co. were invited to turn in 12,000 shares of stock at $90.00 per share, but had not done so in any large degree at the time of writing. The City Manufacturing Co. offered its stockholders another $25,000 for the purpose of reducing its capitalization and looking toward liquidation. The Nonquit Co. has decided to equip a weaving plant to take up some of the product formerly devoted to sale yarns.

The Quissett Mill, a very high grade fine yarn spinning plant, has announced that it is ready to retire all its outstanding preferred stock at $100.00 per share, about $225,000 being involved. William M. Butler, president of the Company, is in line with the tendency of other local corporations to cut down their outstanding interest-bearing obligations when they have the money. The regular semi-annual dividend of $3.00 will be paid on the stock but the Directors have reduced the quarterly dividend to 1 1-4 per cent, this being the first time since 1916 that stockholders have received less than $2.00 per quarter on the common stock.

The details of the changes proposed at the Nonquit Co. include the payment of $10.00 a share in cash, a reduction of the capital, the sale of the land, building and equipment of Mill No. 1 as well as sufficient machinery in Mill No. 2 to permit a remaining balanced unit consisting of 65,000 spindles and 250 automatic looms. The fine and fancy mills in New Bedford are very hopeful of securing sufficient tariff protection from the present Congress to place yarns above 70s on a parity of protection granted to yarns under that number. This has been provided for in the bill reported by the Ways and Means Committee and if approved by Congress will enable more than 1,500,000 spindles to run on yarns for which they were primarily equipped rather than on the medium counts.

The mills have been taking considerable business on fine and fancy curtain materials of rayon and cotton with clipped spots and other fine decorative work. They have also accepted considerable business on new fine cloths for the coming spring trade, most of which will go to converters in New York who handle the extremely fine qualities in textiles. More business has been placed on fine yarn dyed woven shirtings than the mills have received in a long time.

The situation in Fall River is not clearing up very fast. The Granite Mills there are in the hands of receivers and are idle. The Loring interests have withdrawn their bid of $12.50 a share for the Chase Mills because of inability to arrive at an agreement with the City authorities and riparian owners on the Quequeshan River for a water supply and the stockholders are now endeavoring to sell the plant as it stands. It has been idle for sometime. The Arkwright Mills which were purchased by the Loring interests and reequipped are getting into operation and will be run 16 hours daily. It is reported, though not yet fully confirmed, that the Loring interests will make propositions for taking over one or two other Fall River plants.

The fine goods mills in Fall River have had a prosperous four months and are comfortably supplied with business well into the summer. The American and Algonquin Printing Cos. in Fall River have had the most active period in production in their history and are still fully occupied with some departments operating at night.

Significant of the change that is taking place in New England toward the textile industries is the proposition being carried out by the New Bedford Chamber of Commerce for "reselling" the City and its industries to its people.

A program has been arranged which opened on the 15th instant with a rayon and cotton ball at one of the largest amusement parks to include parades, textile shows, publicity describing the city and its industries and in other ways endeavoring to arouse a local public spirit that will wipe out the injuries done by the strikes of last year. The Rayon Institute and the Cotton-Textile Institute of New York combined to display many of the styled costumes that have been shown in different parts of the country, the materials of which were made in part in New Bedford mills.

In Rhode Island and Connecticut the cotton mills are very busy. Most of them are engaged on fancies and specialties for the general converting trades or sold in the finished state for their account. Although the smallest state in the Union, Rhode Island at the present time has more than 400 active textile plants. It has more of the great finishing plants of the country within its limits than any other state and those of them equipped for printing have been doing some extraordinary work from an artistic standpoint.

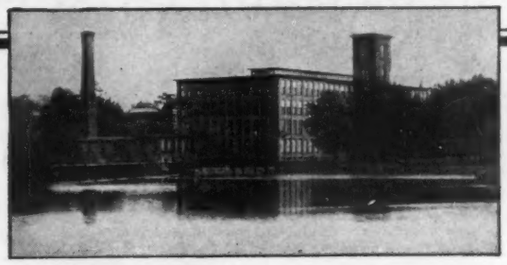
The finishers are beginning to catch up with their orders and are averaging about 70 per cent of their capacity operation compared with 76 per cent five or six weeks ago at the peak of the season. Several of the large printers are still busily engaged completing past orders and bid fair to be fully occupied until July 4th at least. While a great deal of rayon and cotton product is being manufactured in New England and a larger percentage of all-rayon fabrics is on the looms than for a year ago. The tendency toward all-rayon products in cotton mills has been lessening in several directions and if the protection asked of Congress is afforded to the mills in this section it is stated that many mills now using rayon will go onto the finer counts of yarns requiring longer staple cotton and susceptible to finer treatment in finishing plants than was possible even three years ago.

Business in the machine shops as a rule continues light. Exceptions are noted in some of the weaving machinery and spinning machinery plants, but even they would handle a much larger business if it were available. While there has been some improvement in the demand for textile stocks in New England compared with a few months ago the quotation of shares are still much below the parity of earning value.

L. H. Gilmer Company Appoint Southeastern Representatives.

L. H. Gilmer, Tacony, Philadelphia, Pa., have appointed as their representative in the Southeastern territory, the Odell Mill Supply Company of Greensboro, N. C.; The Spartanburg Supply Company, Spartanburg, S. C.; The Greenville Textile Supply Co., Greenville, S. C.; and the Atlanta Textile Supply Company, of Atlanta, Ga. Each of these supply houses will carry a complete stock of Gilmer "V" type moulded rubber belts for supplying the transmission requirements of the mills in the Carolinas, Georgia and Alabama.

Fifteen years with Texaco Lubricants



FOR fifteen years all the machinery in this large South Carolina textile mill has been lubricated exclusively by Texaco.

It is one of the great number of textile mills throughout the country in which Texaco lubrication has demonstrated its substantial economies.

Texaco Spindle Oils, Texaco Oils for looms and top rolls and others are refined especially to meet conditions in the textile industry. They were developed after years of study. These specialized lubricants and the service cooperation offered by Texaco Lubricating Engineers assure to mill operators an exceptionally high power economy and reduction in maintenance.

Some of the power savings effected by Texaco lubrication are almost unbelievable.

This Texaco lubrication Service is available to you wherever you are. There is a Texaco representative nearby. He will gladly give you the benefit of his experience.

TEXACO LUBRICANTS

THE TEXAS COMPANY

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THERE IS A TEXACO LUBRICANT FOR EVERY PURPOSE

NOTES ABOUT MEN YOU KNOW OR KNOW ABOUT

N. Barnard Murphy, for several years superintendent of the New England Southern Mills, Pelzer, S. C., has accepted the position of Superintendent of The Trion Company, Trion, Ga., where Carl P. Thompson is Agent. Frank S. Dennis, who had been engaged as Superintendent, was, as previously reported, transferred to the assistant treasurership of the Ware Shoals Mfg. Co., Ware Shoals, S. C., and Mr. Murphy has taken the position made vacant at Trion by Mr. Dennis' promotion.

W. H. Epps has resigned as superintendent of the Jefferson Mills, Jefferson, Ga., and, it is reported, A. L. Howland has been promoted to fill the position. Mr. Howland was formerly master mechanic.

Robert H. Stewart, assistant superintendent of the Devon Mills, New Bedford, Mass., has been transferred to Rockmart, Ga., where he will have an executive position with the tire fabric mill being erected at that place by The Goodyear Tire & Rubber Company.

C. M. Jones, who has been superintendent of the Shelbyville Cotton Mills, Shelbyville, Tenn., has accepted a position with the American Chatillion Corporation, Rome, Ga., where he will have charge of the Textile Division of this rayon manufacturing plant.

Clyde K. Brooks has become assistant superintendent of the North Carolina Finishing Company, Yadkin, N. C. Mr. Brooks was formerly overseer of dyeing and finishing at the Kerr Bleaching and Finishing Co., Concord, N. C.

W. A. Spencer has been made superintendent of the Martel Mills plant at Egan, Ga., near Atlanta, filling the position made vacant by the resignation of E. B. Wise some months ago.

W. H. Hardeman, for many years overseer of weaving at the Newberry Cotton Mills, Newberry, S. C., has become division manager and superintendent of the Union Division, Consolidated Textile Corporation, LaFayette, Ga. This position was formerly held by Frank S. Dennis, who has become assistant treasurer of the Ware Shoals Manufacturing Co., Ware Shoals, S. C.

At the Chattanooga Golf Tournament

Left to Right, Dwight Williams; Henry Bryan, who won first prize in the Chattanooga Yarn Association Golf Tournament last month; Walter Toy of Scott & Williams, and F. G. Henley of Nick-a-Jack Hosiery Mills.

J. L. Cox, formerly overseer of spinning and twisting at the Martel Mills, Chester, S. C., is now General Overseer of Spinning, Spooling and Warping at the Mercury Mills, Charlotte, N. C.

H. Loyd Beacham, formerly Overseer of Spinning and Twisting at the Houston Cotton and Twine Mills, Houston, Texas, has become night overseer of spinning at the C. R. Miller Mfg. Co., plant at Waco, Tex.

James W. Cox, Jr., has announced that his business of consulting textile engineer and specialist has been taken over and continued with the policies as for the past ten years, by a partnership composed of James W. Cox, Jr., George Fuller and H. R. Mauersberger, the firm being termed Cox, Fuller & Mauersberger. Offices and laboratory of the concern are located, as formerly, at 320 Broadway, New York City.

Edmund I. Reynolds has become associated with the Malina Company, Inc., 440 Lafayette Street, New York City, in the capacity of General Sales Manager. The company produces a complete line of rayon in skeins on cones, tubes and cops, natural, bleached and colors, direct and indanthrene dyed.

Frank M. Noble, formerly of the Sandoz Chemical Works, has joined the sales force of the Federal Phosphorus Company, Birmingham, Ala., and will represent the company in Alabama and Georgia. Mr. Noble, before his connection with the Sandoz Chemical Works, was in charge of the dyeing and finishing at the Eagle & Phenix Mills, Columbus, Ga.

W. B. Tucker has succeeded C. F. Henry as manager of the Greenville, S. C., office of the Armstrong Cork and Insulation Company, and will be in charge of the company's activity in connection with cork cots for drawing, roving and spinning frames for textile mill use. Mr. Henry has been promoted to the managership of the Chicago office of the company.

Louis E. Murphy has been elected president of the E. F. Houghton & Co., Philadelphia, Pa., succeeding the late Charles E. Carpenter. A. E. Carpenter was elected first vice-president and treasurer, and George W. Pressell was elected second vice-president and secretary.

L. B. Kennedy, 507 South Chester St., Gastonia, N. C., is now representing the Alemite Company in the South Carolina territory.

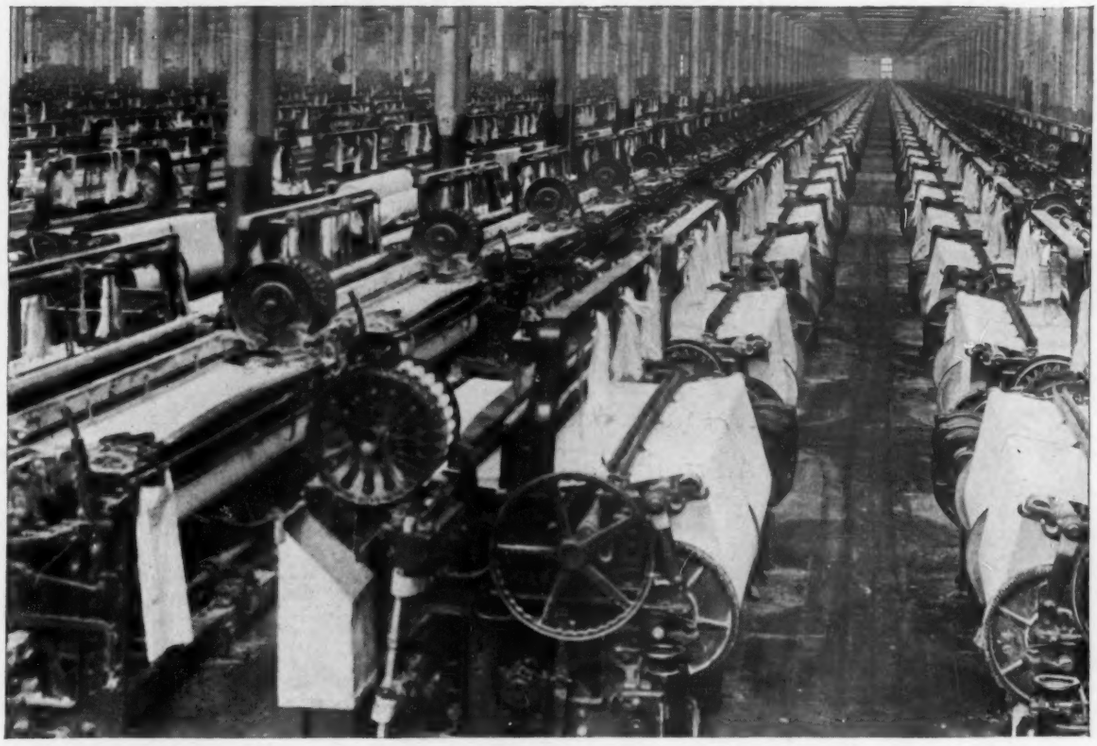
M. B. Garrison, formerly representative of the Mill Devices Co., Inc., of Gastonia, N. C., and Georgia, Alabama and Mississippi, has resigned and accepted a position in New York City.

G. S. McCarty has been made southern manager of the American Aniline and Extract Co., of Philadelphia, in charge of the territory South of Virginia. He will be assisted by John P. McCarty. Both gentlemen are making their headquarters in Charlotte, N. C. Thomas P. Key, who was formerly in the South Carolina territory, has been made Sales Manager of the Philadelphia district.

J. Frank Richardson, Jr., is now representing L. Sonneborn and Sons in the South Carolina territory.

J. E. Addicks, formerly with the Walraven Company, Atlanta, Ga., has become associated with the Columbus Truck and Supply Mfg. Co., Columbus, Ga., manufacturers of Morton warp beam dyeing machines, and raw stock level dyeing machines. Mr. Addicks will represent the company from Virginia to Texas. Prior to the connection with Walraven Company, Mr. Addicks was associated with E. I. du Pont De Nemours & Co., Dyestuffs Sales Division.

"EVERY KNOT A WEAVER'S KNOT"



REAL EFFICIENCY IN WEAVING

40% × 25% = 10%

WE made tests in the weave rooms of several mills over a cumulative period of nine years. Two facts were found—(1) That 40% of a weaver's time is used for tying warp breaks; (2) That when warps made on the Barber-Colman Automatic Spooler and High Speed Warper are used, *loom stops due to warp breakage are reduced* 25%. This means that weave room production will be increased and either weaving costs may be reduced, or a weaver can handle 10% more looms without extra effort, or the weaver's work will be 10% less on the same looms.

Think This Over!

BARBER-COLMAN COMPANY

General Offices and Plant

GREENVILLE, S. C. ROCKFORD, ILLINOIS FRAMINGHAM, MASS.

Here's A Man You Can Use—

He knows how to get the best service out of bobbins, shuttles, and spools. He knows what most of the successful mills in the country are using to improve performance and correct troubles. Usually he will know the solution to any bobbin, shuttle, or spool problem the minute you spring it.

If he doesn't know he can soon find out, for he has available the data gathered during half a century of manufacturing experience.

The man we describe is your U S Service Man, the chap who covers your territory. Take advantage of the service he offers.

Put your bobbin, shuttle, and spool problems before him.

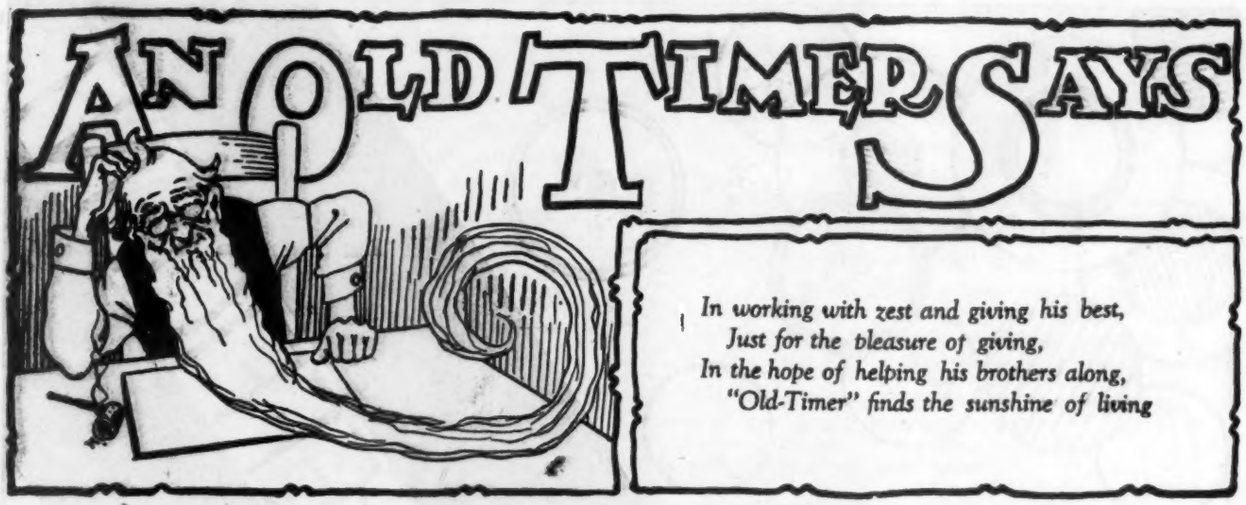
You'll be glad you did

U S BOBBIN & SHUTTLE CO.
PROVIDENCE, R. I.

Branch Offices:

GREENVILLE, S. C. HIGH POINT, N. C. PHILADELPHIA, PA. ATLANTA, GA.

BUILDERS OF BETTER BOBBINS, SPOOLS, AND SHUTTLES


AN OLD TIMER SAYS
In working with zest and giving his best,
Just for the pleasure of giving,
In the hope of helping his brothers along,
"Old-Timer" finds the sunshine of living

Do You *Really* KNOW Yourself?

Do you know yourself?

Do I know myself! Well, of all the foolish questions I have heard Old-Timer ask, that takes the cake. "Do you know yourself?" Sure, I know myself; who don't? My name is John Smith. I am overseer (or superintendent) of Blankville Mill and we have just about as good cost as any of our neighbors and a little better production than most of them. We run our looms. . .

Wait a minute. Back up. You've started to brag now, just like you were the only mill man in the world, but let me tell you. . . . Say, what did I ask you, anyway?

Well, I'm convinced that you don't

Don't what?

You don't know yourself.

And you *are full of prunes, or something. Either talk United States or cut it out and let's talk about loom fixing, grinding cards, or running a room or a mill. . . .*

Yes, I saw your new looms and I agree with you that is the finest loom I have ever seen.

You bet it is, and now just watch me take care of those babies. I'm going to follow that oiler half the time, and the first darn loom fixer who starts to bung up one of those looms is going to get the air so quick he will think Lindbergh snatched him up as he passed by on his way to Mexico.

Now wait another minute, and don't talk so fast. How much did those looms cost?

$350.00 each.

And how many have you got that weaver on?

Sixty.

Now let's see, 60 × $350 equals $21,000. Then you have one weaver looking after $21,000 worth of looms.

Sure, what of it. Don't you think he can run them?

It's not that at all. I was just wondering how much you valued that weaver at if you value his looms at $21,000. How much is the weaver worth?

Hell, he's not worth a darn. I've run him off a half a dozen times and just took him back this time because I was in a hurry to get these new looms going.

I knew you didn't know yourself.

Well, for the love of Mike. What is your slant, anyway? Just sit right down here and cut out the bologna or molasses or whatever it is and tell me what's on your mind. Every time I start in to explain something to you, you interrupt me by saying I don't know myself and I am just about to the decision that I certainly don't know you. *Are you sick or something?*

Well, no, not exactly, but in all my forty years of life, my 25 years in the mill, I have come to the conclusion that if a man did not know any more about looms, spinning frames, cards, etc., than he knows about *himself*, we would all be darn poor overseers and superintendents.

Some big man once said: "You are the center of your own universe," and he surely spoke a parable. Interest in *self* is the whole key to what you can get from the world, and this is not selfishness by any means. If a man could realize that he can practically make himself over by concentrated study, by reading the textile magazines, by studying text books, by going to textile meetings, and bringing home with him every good idea he can get, by reading and studying with the sole purpose of taking that knowledge into the mill with him—then nothing in the world could keep that man from being promoted.

The trouble with most of us is we do not drink the knowledge in, so to speak. We get an idea and say at the time, yes, that's all right, but we do not carry

Just Pretend

That this article represents a conversation between "Old-Timer" and You. In it you will find that same vein of sincere advice and logical thinking which characterizes all of his writings. If you don't handle looms, apply his illustration to your own situation, and to yourself. Read it carefully; the parts which are italicized represent your end of the conversation, and the rest is "Old-Timer." Do more than read it. When you have finished, as the old gentleman suggests, try to catch some of those ideas that are running around loose!—The Editor.

EFFICIENT
Colloidal Tallow
for perfect
Cotton Finish
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E.F.DREW & CO. INC.
15 EAST 26TH STR.
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BOSTON-PHILADELPHIA-CHICAGO-ATLANTA-CHARLOTTE.NC.

it to our work. We do not profit by it.

You have a dollar, and I have a dollar.

We swap.

Now you have my dollar and I have your dollar.

We are no better off.

But when you have an *idea* and I have an *idea* and

We swap,

Then you have two ideas and I have two ideas.

Ideas are what you and I get paid for, old man. If you had both arms cut off you could still be as good an overseer or superintendent as you are now, couldn't you? It's not the size of the dog in the fight, but the fight in the dog, that wins.

Just so it is with the *ideas* in the overseer or superintendent that makes him a better man than the fellow who just drifts along and waits for the trash pile to catch fire before he does anything. The man with *ideas* moves the blamed trash pile so there can't be any fire.

Successful men are good mixers. Sure, but it is because they mix a high quality of brains (ideas) with a bulldog tenacity to keep everlastingly at a problem until they make a success of it.

But some people are like a shadow, always on the other side.

Now, you wait a minute. What's all this got to do with that bum weaver you asked me about?

Oh, well, I just intended to show you that he was worth more than $21,000. That was what you said the looms he was running were worth.

And, pray tell me, Mr. Wiseman, how do you get that way?

I will answer you by asking just one question: How much would the looms be worth if you didn't have a weaver to run them? I really only wanted to use that as a crude illustration to bring out my point—what I want to talk about is overseers and superintendents.

Only a few weeks ago I made this remark to one of the biggest mill presidents in the South; that is, I mean he is one of the mill presidents who controls one of the largest groups of mills. I said: "Mr. President, you have over ten million dollars invested in machinery, etc., in your mills, but did you ever stop to think that the investment in machinery is not worth a fraction of what you have invested in men? If you don't believe it, suppose you let that machinery run without the overseers and superintendents for awhile and see what happens."

Do you know yourself?

Can't you see, brother, I am wandering all around here, beating the devil around the stump and all that, trying my level best just to drive one thought home to you, which is this:

It is your *brains* that the boss is paying you for. Ideas. Get more ideas and get more pay.

Get Ideas and you will get promotion.

Get Ideas and you will get a reputation.

Get Ideas and you will progress.

Get Ideas and it will get you out of a rut.

Get Ideas and you will be an outstanding man.

Get Ideas and you will enjoy your work because you will know you are forging ahead of your competitors.

He *thought*, oh yes, he *thought* he was
A great big, hefty gun,
Who knew 'bout all there was to know
Beneath this flaming sun.

He *thought*, oh yes, he *thought* he was
The great, the all-inspired,
Until, one day—alack! alas!—
He *knew* that he was fired.

BY MRS. NORMAN G. MEADE,
of Cotton's Editorial Department.

[This verse was suggested by the sentence in "Old Timer's" article in the April number of COTTON, "I have known of quite a few men who thought they were 'big guns,' until they got 'fired.'"]

Who thought a few years ago a weaver would be running 60, 80, or 100 looms?

Who thought a few years ago spinners would be running 18, 20, or 30 sides?

Who thought a few years ago speeder hands would be running 4, 5, or 6 speeders?

Well, some human being came along with an Idea, didn't he? Then another fellow took that idea and put his with it. Then another fellow took the two ideas and put his with them, then he had three.

Yes, and now I hear you say we have gone as far as we can go. But I will answer you by saying you thought the same thing a few years ago when a weaver was running 20 looms. You didn't see how it could be possible for that same weaver to run 40 looms, did you, but by gum, he's doing it, isn't he?

Now, brother, there are just as many ideas running around loose in your room or mill today as there were several years ago.

See if you can't catch some of them!

"Computing Fabric Cost."

This is the title of a book on textile cost accounting which has just been issued by the McGraw Hill Book Co., Inc., 370 7th Ave., New York City. The author is F. H. Hill, Jr., who is cost accountant of The Consolidated Textile Corporation, with headquarters in Lynchburg, Va.

The book is in two sections, and represents a simple, though accurate discussion of how to organize and operate a textile cost accounting system. The first part of the book shows the methods of keeping track of the costs in the various departments of the mill, and the second part presents a method for working out accurate fabric cost. The price of the book is $5.00 per copy, and it may be secured either direct from the publishers or through COTTON's book department.

The 1929 Edition of Blue Book of Southern Progress.

The 1929 edition of the Blue Book of Southern Progress, published by the Manufacturers Record, Baltimore, Md., is now ready for distribution. This volume contains 324 pages, full of facts and figures dealing with the economic advancement of the southern states, in a general way, and also discussing the growth of the leading industries, such as agriculture, dairying, poultry, manufacturing, rayon and cotton, lumber and wood-working, etc. etc. A special chapter on the political revolution of the South during the latest presidential campaign is of particular interest. The price of the book is 50 cents a copy, and copies may be secured either direct from the publishers or through COTTON'S book department.

Birmingham Discussion on Weaving.

(*Continued from page* 885.)

Mr. Poole added further that the cam used has a great deal to do with the running of the harness. "You can't take a quick or a sharp cam and make a steel harness run on it. As to the straps breaking, the only thing you can do is to put on a heavier strapping."

Percentage of Filling Waste

The amount of filling waste was the subject of the next question. Mr. Moon, who is connected with one of the Avondale mills, reported less than one-half of one per cent, on 40-inch looms running 158 picks per minute, and 30-inch looms running 178 picks per minute, 30s and 40s yarn, using the No. 19 sliding feeler, the Hopedale feeler, and one Midget feeler.

The report of Homer M. Carter, of Pepperell, was next read by Mr. Poole. This report showed that on 13s filling, making a 30-inch 76x58, 2.50-yard drill, 164 picks per minute, the filling waste was 1.06 per cent, based on the net weight of filling put in the batteries, and including that going into waste. He uses the Midget feeler and the Burdett bunch builder. Mr. Carter reported that they try to keep after the doffers to use pieces in piecing up, having these pieces at the end of the frame for this purpose. He added that the quill waste was .75 per cent, including yarn sloughing off, based on the gross weight of the cotton.

Mr. Lane of Cordova reported .6 per cent on 40s filling, 42-inch loom making 38½-inch goods, 154 picks per minute, Midget feelers.

L. A. Edmunds made the next report. He said he uses the Nordray sliding feeler, and makes weights ranging from 8-ounce to 2.80-yard, five different styles. Over a four weeks' test his figures, for 11s to 14s, showed just about 1 per cent.

"We do not carry our quill waste back to the spinning room," he said, "we take it all off at the piece box. We do not use any bunch builder. On our H & B frames there is a lever you put your foot on which disengages the gears which drive the ring rail. We have one boy who does this, and he holds this lever down for about two yards which forms our 'bunch'."

At this point Mr. Ryckman brought out the point that it is more a matter of the kind of bunch made on the spinning rather than the type of feeler motion, as to the amount of filling waste made. He said he has two types of feelers, and can see no difference in the two; "if you put the proper bunch on the bobbin, you don't need to worry about the filling waste."

Mr. Howarth pointed out that a number of mills use pieces for starting up on spinning after doffing, and a number of those indicated they were following this practice. Mr. Howarth said that by having these pieces in the doffers' pockets or at the end of the frame, when a variety of numbers is being run there is the probability of having a few picks run light or heavy in the cloth due to a mix-up in using the pieces.

"We have a system for which I have been criticized," said L. A. Edmunds. "After the frame is doffed, you know you shake the traverse to take out the slack. Our system is that we teach the doffers to break just as few ends as possible, and then the frame is started up just enough to let the threads catch that will stick. Then the frame is stopped and he twists the ends up and then starts it up again, and as a rule there is only one or two that fails to stick. Those that do fail to stick, we teach them to wait until the rail gets to the bottom, and then wind the bunch on the bobbin, and go ahead.

"Before we started we had 300 to 400 pounds of filling waste in the weave room a day, and after we got onto it, and put in the No. 7 Draper spindle, we cut our waste down from about 10 to 1 per cent or less."

"Do you pay the doffers by the box?" asked Mr. Schwartz.

"No, by the hour," replied Mr. Edmunds.

"Loom Stops Due to Feeler."

The next question asked, "What percentage of your loom stops are caused by the feeler?" W. L. Phillips was called upon and reported that in making tests of loom stoppage, on sets of 40 to 50 looms on 43s filling, he had found stops from this cause to run from 4 to 6 a day. He said on coarser yarns the number should not be so large.

Mr. Dupre and Mr. Lane of Cordova reported that their tests showed that only four per cent of their total loom stops were filling stops, leaving, as Mr. Schwartz pointed out, 96 per cent of the total loom stops from warp and causes other than filling.

Here Mr. Cook read the report of Homer M. Carter on this question: "There are no loom stops caused directly by the Midget feeler. Our loom stops on filling changes are about 25 per cent of the total stops. They are caused by the transferring mechanism being out of adjustment, or the improper threading of the batteries or other mechanical defects other than the feeler." This is on 8s to 27s, single change, Mr. Cook added.

Oil-Less Bearings on Looms.

"What experience have you had with oil-less bearings, if any?" was the wording of the next question.

"I cannot say very much about it," reported Mr. Howarth, "but I have put on quite a few Pitman arms, and they seem to hold up pretty good. I have also put them on the cam shaft and crank shaft and they also seem to be holding up good, but we are only in the experimental stage with them."

"We are running the oil-less bearings on harness rolls and rocker bearings, and if they are properly set there is nothing to wear," said W. L. Underwood, overseer of weaving, Shawmut Mill, Shawmut, Ala. "You can't tell any difference in them now and a year ago."

Mr. Howarth explained this bearing as an oil-soaked wooden bearing requiring no oil. He said he had seen one case of where a rocker shaft had worn and the bearing was unaffected. He explained this by saying that they use machine-scrubbing equipment, and apparently some of the scrubbers had gotten some grit or oil in the bearing which had worn the shaft rather than the bearing. "I saw one mill that had 24

looms with everything equipped with oil-less bearings, and they have been running about a year, and I couldn't see any perceptible wear in these bearings."

D. S. Cook added that at an informal meeting of mill men in Shawmut recently, several of the men had reported some very interesting results with the oil-less bearing, and he considered that it "would be well worth our while to investigate this oil-less bearing, because some of the reports were very remarkable." He added that the difficulty as to wearing the rocker shaft had been overcome.

"I don't think you could call a Moccasin bearing an oil-less bearing," said Mr. Howarth, "but I think it is just about as good as any."

Reducing Bow in Duck.

The last weaving question on the prepared questionnaire asked, "What is the best method to reduce bow in cloth?" Leslie E. Lane reported that, while he had had no experience, he had heard that tapering the sand roll, from the ends, with gummed slasher tape, would tend to relieve this problem. Mr. Underwood, of Shawmut, was called upon, and explained that so long as there is contraction in cloth there will be bow. Joe Lanier, production manager at Shawmut, verified this, adding that means of eliminating it had produced an artificial condition in the goods and that the bow afterwards had a tendency to return.

Crossed Ends and Lost Ends.

The concluding discussion of the morning session referred to several questions asked by Mr. Schwartz. First was a discussion with reference to crossed and lost ends. It was brought out that a great proportion of crossed ends in the weave room was caused by poor leasing out of the patterns in the weave room, thereby giving the tying-in machine operative bad patterns to work with. It was also brought out that the tying-in machine may very often tie doubles, which, after the warp is straightened out in the weave room, causes either an extra loose end or a crossed end or a lost end. Several members also stated that a great proportion of the lost ends are caused on the warpers and in the slashing, and must be rectified at those points. Mr. Schwartz here referred to the use of bitten spools, placed on the arch of the loom, which are filled with sized yarn at the slasher. The use of these spools, he explained, prevents the necessity of the weaver breaking an end out of the selvage to replace a lost end. Mr. Schwartz also asked for practices as to whether the loom fixer does the leasing out of patterns, or whether this is done by a special lease-out hand, but there was no discussion on this.

For luncheon, the members participated in a Dutch affair, following which an afternoon session was devoted to a discussion of slashing or sizing questions.

Length of Time in Cooking Size

The first question brought up in the afternoon session on slashing was, "How long do you cook size, and under what temperature?" Mr. Howarth pointed out that there seems to be a general sort of practice as to doing this. S. B. Schwartz, superintendent, Maginnis Cotton Mills, New Orleans, La., reported that, using 40 fluidity starch, he cooks his mix for 1½ hours. Mr. Howarth reported that at Lanett he has found a cooking time of 1¼ hours to be the most satisfactory. Mr. Ryckman wanted to know how he determined it.

"That's sort of like asking why does a chicken cross the road," replied Mr. Howarth. "I took some starch home and boiled it on the stove just the same as if I was making a size mix. I cooked it from 15 minutes on up to two hours, and kept using a spoon in it and letting it run off all of the time. I think that anywhere from 1 to 1½ hours gives me the best viscosity, or whatever you want to call it. Anything under an hour made it thinner, and anything over 1½ hours looked like a waste of time. At a half hour, in fact anything under 45 minutes, the globules were not separated and would cling together like a bunch of grapes.

"Another thing I found out was that the longer I boiled thin boiling starch the thinner it got, and the longer I boiled thick boiling starch the thicker it got. So I struck what I think is a happy medium. I wouldn't want to go much over an hour on thick boiling starch. I keep it at from 207 to 211 degrees."

"But you didn't have any condensation in cooking it on the stove?" W. L. Phillips brought out.

Mr. Howarth stated that, "when I am all done cooking the size, I fill up the kettle with hot water. I got away from having a faucet in the side of the kettle and putting in water at first up to that point. Now the man puts in water and boils it so it doesn't splash out, and when it is done he adds hot water to bring it up to the top. I figure my size by the ounces of starch per finished gallon and the ounces of compound to the finished gallon."

"We have all the water in there first and then we put the starch in and stir it for 15 minutes and then start cooking it," reported Mr. Schwartz.

David Cook asked Mr. Howarth as to the lowest degree of temperature at which he would add water. Mr. Howarth replied that he has his water run back from the slashers, and that while he does not know the exact temperature, it is not so hot that "you can't put your hand in it." He added that usually it is necessary to add very little water in order to bring the level to the top. He uses an open coil in the cooking kettle and a closed coil in the storage kettle.

"Any objection to using cold water in there?" asked W. L. Phillips. Mr. Howarth replied that he has used all degrees of warm water, and can tell no difference. Mr. Phillips brought out that cold water would reduce the temperature, and David Cook stated that he uses the same system as Mr. Howarth and finds it does not vary the temperature more than two degrees. The chairman called upon Vasser Woolley, Jr., of Seydel-Woolley Co., to discuss the subject.

"The matter of boiling starch is only one element in the function of cooking—one method is by agitation and the other is boiling. If the agitation is held constant, then there should be the same time involved, but you can use more boiling and less agitation, or more agitation and less time in boiling. You are trying to break the coating of the starch granules, and

that can be done either by boiling or by agitation," responded Mr. Woolley.

"Which is the better?" asked Mr. Cook. Mr. Woolley replied that both elements are necessary, but that they have broken starch down in a laboratory entirely by mechanical means until it had no viscosity.

"Do you always buy the same starch from the same people?" Mr. Howarth asked next.

"Yes," replied Mr. Schwartz, "but we did not have it tested until recently. We had occasion to buy some starch from another concern, and ordered 40 fluidity, and when it came it wasn't the same as the 40 fluidity we had been using."

Mr. Howarth here recalled that at an Augusta meeting of the Association several years ago, he "started something" by pointing out the different products received from different starch manufacturers when any stated fluidity was called for, pointing out that each starch manufacturer apparently uses a different meter for designating the fluidity of the starch, and that there is no coordination between them on this point. He told of sending three different kinds of starch back to the three manufacturers, all supposed to be 40 fluidity, and said that they showed up to be one 4 fluidity, one 41 fluidity, and another 22 fluidity. Since the meeting in Augusta where this point was brought up, he said that instead of buying on specification, many mills are submitting samples of the starch they desire to duplicate, and that even starch salesmen are asking for these samples in order that the product might be matched, regardless of the designation of each company as to the particular fluidity.

"Fluidity is not the only characteristic that determines its thin boiling or starching qualities," said Mr. Schwartz. "The amount of free acid is a factor."

Mr. Howarth pointed out another thing; that it is impossible to mix two starches of different fluidity and secure accurately an average fluidity between the two. He had referred to using both thick and thin boiling starch, and was asked several questions concerning his preference. He said that for several reasons he had gone onto thin boiling, being about the last mill in the South to do this, and that now he had just as soon go back onto thick boiling. He said, however, that the thin boiling starch is much easier to handle.

A question came up here as to the acidity of thin boiling starch, and Mr. Howarth repeated his statement in the morning session—that while thin boiling starch is "acid-treated," he did not believe any reputable starch manufacturer would send out a product that had too much acid in it. J. Hudson Almand, of Penick & Ford, Ltd., verified this, stating that some thin boiling starch will run from .05 to .001 per cent acid, which is too small to do any damage, and that furthermore, such a small acid condition will be neutralized before going onto the yarn.

Here J. T. Phillips gave his practice as cooking between 1¼ and 1½ hours, at about 210 degrees.

The Circulating System.

Mr. Howarth at this point asked for discussion with reference to the circulating system. W. L. Phillips stated that he does not like it because it wears the size out and thins it down, due to constant circulation of the mixture. He said when he went off of it he cut down his size consumption by about 20 per cent.

"I would say that if you are making only a few mixes a day, and your consumption is not great enough to use it up, then you might have to use something other than the circulating system, because the continual running of the size would wear it out," commented Mr. Ryckman. "But where you mix 25 tanks a day, like I do, you never have a chance to wear it out because one tank of size will hardly keep us going in the boxes, and I contend that in a case like this the circulating system is the real thing. If Mr. Phillips lets it sit in the box and runs his size from the top and right over the top and out again, I cannot see any advantage in not having the circulating system."

"I have a size leveling control," said Mr. Phillips, "it is on the storage kettle above the size box, and as the size is taken up this control opens up to let more in, just enough to replace what the yarn is using."

Mr. Howarth explained that on his 14 slashers, he has just changed the hook-up which will give him a flexibility, with the circulating system on some and not the others. However, he said, "if you will stop your controls and let the man control the size by hand, and compare this with that which is automatically controlled, then you will see why we put in the circulating system."

Temperature in the Size Box.

"What temperature do you keep in the size box?" was the subject of the next discussion. Mr. Phillips reported 206 degrees; Mr. Cook, 204; Mr. Thompson, 206; and Mr. Howarth, 196 degrees. Mr. Howarth expressed the belief that in the size box the evaporation takes care of the condensation, and that much of the loss experienced here is occasioned by the size being blown out by pressure, if the openings in the coil are turned upward. He started then a discussion of temperature control equipment on slashers, declaring that, "If I have anything on the slashers that is good, it is the temperature control on the size box." Mr. Ryckman said they might be all right, but that they made things a little too complicated, and the slasher room men were all the time getting them "balled up." Mr. Phillips and Mr. Howarth pointed out that the help were not supposed to change them. Mr. Howarth asked W. L. Phillips if he has temperature controls on the cylinder, and the reply was that "I wouldn't run slashers without them." Mr. Howarth also had a word for them, stating that "we used to run 11 pounds on our cylinders, on heavy sets, and now I pass by and see them with about 3 pounds. They start off at about 10 pounds and gradually go back down." He added, however, that the saving in steam, while important, was not the chief advantage, this being the evenness of temperature resulting in a more evenly sized warp and less end breakage on the loom.

Speeds of Slashers.

Speeds of slashers were next discussed, it being pointed out that this is dependent upon the number of yarn, the number of ends, etc., etc. Mr. Howarth says he has one construction on which he runs 6,000

ends of 12½s at 11 yards per minute. Here J. T. Phillips asked if anyone had tested the temperature between the cylinder and the hood in the morning, and again in the afternoon, indicating that there would be a difference of up to 30 degrees.

Reverting to the slasher speed question, other figures given were: sateen, 4,000 to 5,000 ends, 19 yards a minute; drills, 23 yards a minute. W. L. Phillips reported a speed of 50 yards a minute on 30s yarn, 2,200 to 2,500 ends, and 45 yards a minute on 1,820 ends of 17½s was reported by Mr. Thompson, of Siluria, who also gave 46 yards a minute for 3,000 ends of 22s. W. L. Phillips told of visiting a print cloth mill which uses a speed of 60 to 65 yards a minute, and Mr. Howarth said this was the old speed for print cloths in the Fall River mills.

Moisture Percentages.

The next discussion referred to the amount of moisture left in the warp yarn. Several men gave their figures, ranging from 6½ to 11 per cent. Mr. Schwartz asked how a warp containing 11 per cent moisture could be woven, and Mr. Howarth expressed the opinion, concurred in by Mr. Ryckman, that regardless of the moisture left in at the slasher, the warp will in time adjust itself to the regain condition of the weave room, and Mr. Ryckman said that "I think you should leave whatever regain you will have in the weave room."

Why Do Old Warps Run Better?

W. L. Phillips wanted to know why it is that warps that have lain on the floor for a while will run better than fresh warps. Mr. Cook declared that it probably had time for the moisture content to adjust itself, as is the case with the setting of twist in filling, and Mr. Howarth said if the sizing compound should have any glycerine in it, this would have a tendency to attract moisture, and Mr. Ryckman pointed out that it was probably a question of the capillary attraction distributing the moisture content more equally throughout the warp, regardless of whether it was sized with more or less moisture content than the weave room regain.

Determining the Regain.

"What method do you use to determine the percentage of size and moisture you are putting in the warp?" was the next question. Mr. Ryckman explained that he weighs some raw yarn, then runs a few strands through the slasher, and weighs them, to get the gross weight. He then subtracts the two weights which gives the total regain, then puts the sized yarn in an oven and reduces it to a bone-dry condition, which gives the percentage of moisture; then by treating the yarn with hydrochloric acid, he returns it practically to the weight in the raw state. "We take three warps and weigh them off of every slasher every day," he said, "and get the weight of the section beams and the weight of the sized yarn and unsized yarn, and in that way we get an approximation of it, but to get it accurately we proceed in the way I have explained."

Samuel P. Rakestraw, of Seydel-Woolley Company, reported their method of taking a yard of warp before sizing, and running four ends through the sizing and reeling it, then testing it for both regain and strength. In connection with tests made by his company, Mr. Woolley urged that in submitting samples for test, the mills indicate, or send also a sample of the grade of cotton used, as Paul Seydel had determined a great difference in the kinds of cotton, as to their hygroscopicity. W. L. Phillips said he uses a method similar to that explained by Mr. Ryckman, but added that "the right way, after you have determined what you want, it to put a Size-ometer on there it will tell you every second of the time what it is."

There was a brief discussion as to the possibility of stretching yarn at the slasher, and Mr. Howarth expressed the opinion that it is practically impossible to size yarn on a slasher without stretching it, but that the total amount will not be over three per cent at the outside and this is not dangerous. There was some further incidental discussion, following which the meeting was adjourned. The date of the Fall meeting, at which carding and spinning will be discussed, is to be announced later by the executive committee of the division.

New Exact Weight Scale.

The Exact Weight Scale Company, Columbus, Ohio, have placed on the market a new scale for extreme precision, which is shown in the accompanying illustration. It is adaptable to textile production, to color determinations and dye formulae, etc. It is pointed out by the company that the act of weighing on these scales is a visible operation, and that these commercial scales are semi-analytical balances, weighing out-of-level, and requiring no adjustment to a

new position. They are designed both in metric and avoirdupois specifications to meet varied requirements. Model No. 51, shown herewith, is generally constructed with all-aluminum polished with nickel trimmings. It is equipped with agate bearings. On the avoirdupois specifications, the beam capacity is 1/10-ounce graduated by 1/5000-ounce, with loose weights to maximum capacity. The avoirdupois capacity is four ounces. The metric capacity is 100 grams, with a beam capacity, 2½ grams, graduated by 50 milligrams, with loose weights to maximum capacity.

Report of Henderson Discussion.

(*Continued from page* 880.)

will be for weaving or knitting or whatever you are going to use it for."

Mr. Brown reported that the test had been carried on from April 15th to April 30th, and that during that time a big variation in weather conditions was experienced. He found that the oiled stock "held the weights a lot closer and was not so susceptible to changes in the moisture condition. The tests showed that the oiled stock was better all the way through and made a better yarn, from the results of the spooling, than did the plain stock."

"Does it require close attention?" asked Mr. Brietz.

"I used the high pressure system with a double pump arrangement," replied Mr. Brown, "and you set the gauge for a certain amount and lock your pump and it will stay that way. I used .3 of a per cent. It was on Strict Middling and I wish I had used more, because I could have. It does not require strict attention."

Mr. Hilton interpolated that his tests two years ago found that a higher speed on spinning was possible, with fewer ends down, with the oiled stock. In answer to questions, he said the oil has no objectionable odor, and that it will wash out with soap and water, according to tests made by Albert H. Grimshaw, of the school's faculty.

"Which shows the most waste?" was the next question asked of Mr. Brown. "The oiled stock gave more waste in the picker room," replied Mr. Brown, "there was more heavier stuff thrown out in the pickers, but the plain stock gave more waste on the cards." He added that at the spoolers the amount of shale and leaf in the boxes carrying the spools made the difference between the oiled and the plain stock more apparent.

Mr. Hilton here said that on the test he ran he made 20s yarn with a front roll speed of 162 r.p.m, spindle speed of 9,800 r.p.m. He said the ends down were higher from the plain stock than from the oiled, and Mr. Brown furnished the figures on this as four ends down per thousand spindles per hour on the oiled stock and six on the plain work. However, he added, this particular test was not made under mill conditions, as was the case with the Smyre mill test, but at the school with the oiled stock running on one end of a frame and the plain work on the other end of the same frame.

Here Mr. Cates asked Mr. Hilton if he thought there is a greater variation in staple length in Carolina cotton this year, and Mr. Hilton's reply was that for the past four of five years the quality and evenness of the cotton crop has been decreasing.

W. T. Byrd, overseer of carding, Erwin Cotton Mills, West Durham, N. C., asked about the weights through the picker room, and the condition of the card clothing on the cards on which the oiled stock was run. He pointed out that compressed cotton is hard to dry out; and that with a week or so of damp weather, the card clothing has a tendency to fill up.

Answering the question as to the weights in the picker room, Mr. Brown replied that "they will stay more constant with the oiled cotton in changing weather conditions. We were using the vacuum stripping system, and the amount of strips was less with the oiled stock." As to the condition of the cards, he replied that he couldn't tell any difference; those on the oiled stock looked just about like the others. He added that "when we first started up we thought it was making a web not as clear as the regular work but then it looked afterwards that it was making a better web with not as many neps in it." He explained that he had examined the web with a magnifying glass.

As to the effect of the oil on the moisture of the cotton, Mr. Brown explained this was negligible, because .3 per cent of the weight of the cotton means only about 5 ounces to 100 pounds of cotton, and that this does not gum up the steel rolls. He said an excessive amount of oil might do this, but up to .75 of one per cent would not affect it.

"I think the amount answers the question," said M. R. Vick, overseer of carding, Rosemary Mfg. Co., Rosemary, N. C.

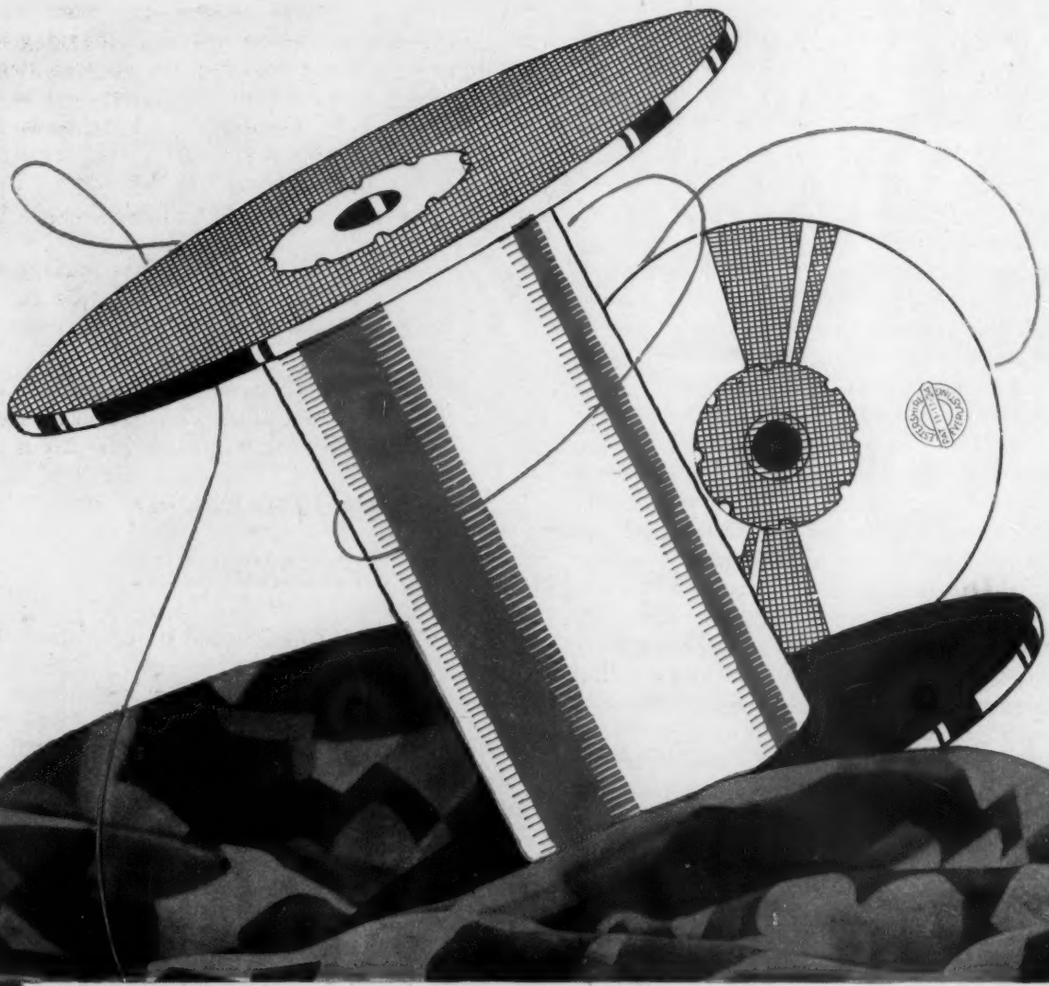
E. M. Holt, superintendent, Erwin Cotton Mills No 1, Durham, N. C., said that a few years ago he was running a low-grade cotton from Oklahoma which apparently had been picked up off of the ground. He used oil on this and found that it kept down a lot of the dust and fly. Mr. Hilton asked if this cotton did not have a sort of silky feel, and pointed out that with this irrigated cotton, it had been found difficult to get over about 60 per cent of standard break without treating it with oil.

Means of Improving Breaking Strength

The next discussion was led by C. S. Tatum, of Raleigh. The subject was to discuss means of improving the breaking strength of yarn.

"I have made lots of experiments along this line to determine what would improve breaking strength," said Mr. Tatum, "and I have never found anything that would improve breaking strength as much as carefully selected cotton. I know that everyone here will agree with me because I doubt if there is a one of us who is responsible for the buying of the cotton, and we all like to lay our troubles on the cotton. But it is an important thing, and has been neglected. I think that in many cases the selection of our cotton is in the hands of men who are not qualified to judge it from the standpoint of spinning value. They can tell whether it is white or blue, or leafy or clean, but they know nothing of the spinning value. I claim to be one of those rare specimens who know something about the spinning value of cotton, and I have picked cotton out of a warehouse for this purpose, and it was easy for me to make eight to ten pounds improvement in the breaking strength by taking the right kind of cotton. That is why I say it is the most important thing as to breaking strength.

"Of course we know that the beats per inch in the picker room have been discussed pro and con a great deal, and I believe there is a great deal of improvement that can be made by reducing the number of



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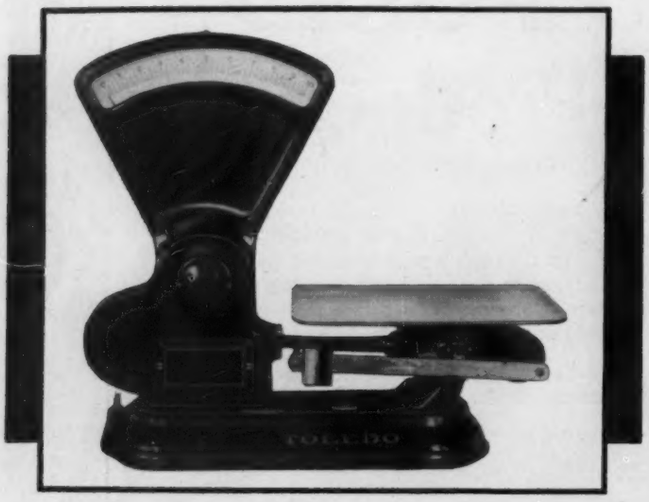

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beats per inch. This, however, is a point that must be worked out for each mill, but we should run with a minimum number of beats and still clean the cotton.

"The settings of the card are all important, but the most important is the setting of the feed plate. Some people set the feed plate too close. My rule is to set it as far as possible without getting a cloudy web; about a 17 is what I call a good setting here.

"The next important item is the proper regulation of the humidity—or possibly I should have mentioned it second. Most of us are too careless about the humidity. I think if a man's cotton is properly selected and his humidity is properly regulated, he can be a little careless about his settings and still get results. I think that the cotton and the humidity are the most important things in regard to breaking strength. Some of us do not make full use of what we have, and some of us do not have what we ought to have. We do not watch the heads closely enough to know what we are doing. We do not have automatic regulation, and we require our spinning room overseer, for example, to make hourly readings of his thermometers. This makes it certain that the humidity is regulated. If you do not have a definite system of some sort you will not watch it as closely as you should.

"We have made an improvement in breaking strength by cutting down on spindle speeds. On raw stock dyed 14s, we were running our spindles a little above catalog speed, and catalog speeds are supposed to be for white stock, and by reducing the spindle speeds about 15 per cent below what we were doing, and taking out twist to keep the same production or a little more, we increased our breaking strength and running of the yarn materially."

Mr. Tatum at this point called upon L. R. Gilbert, of Weldon, N. C., former president of the Association, who made a very interesting report based on various Arkwright tests covering factors affecting breaking strength.

Reports on Arkwright Tests.

"I want to give you the results of a lot of tests made throughout the South relative to breaking strength," said Mr. Gilbert. "In talking about this question we are going to assume that the conditions in your mill are in good shape. We are not going to talk about breaking strength on account of tensions on speeders, or spindle speeds, or anything like that; let's suppose that your machinery is in good shape, etc.

"To begin with, the best practice is to get away from beating the cotton too much. More opening and better opening and less beats per inch is the order of the day. Hugh Clarke, out in Texas, has thrown out, after thorough investigation, every blade beater he had in the house and he is putting in porcupine beaters except on his finishers, where he is still using the Kirschner beater.

"It is good practice, wherever possible, to cut down or eliminate the second process of picking. In all probability, single-process picking will be the answer to that problem.

"With regard to the cards, there has been an experiment made by George Brietz as to how much difference you would get in your breaking strength carding 16, 12, and 8 pounds an hour per card. He found that the breaking strength is some better at 12 than at 16, but that it was ten pounds better when he dropped down to 8 pounds an hour. Therefore his carding is a great deal better when he cards light." (In response to a query from Mr. Vick, it was stated that Mr. Brietz in his test changed the production of his cards by changing the draft only, leaving the doffer speed the same.)

"Jim Chapman at Inman made a test with reference to card draft, carding with drafts of 110, 120 and 125, and he said he had to go back to 110 to get the best breaking strength. His superintendent made a test and said he got just as good a breaking strength at 140. In my opinion you will not get much difference in the breaking strength regardless of the draft.

"Mr. Tatum touched on humidity. It is not always good practice to have humidity in the picker room, because you must have more equipment than some mills can buy, or you must draw the air from the outside and not from the room because of the enormous draft of air passing through there. It is good practice, however, to change the weight of the laps every hour or two in accordance with the moisture conditions and regain in the room."

With reference to the setting of rolls, Mr. Gilbert continued, "I believe there is a chance of bettering your breaking strength by setting on the drawing. Carl Harris has made a test on roll settings from the slubber on through the spinning, and his variation in the setting of the rolls was large, and he did not find enough variation in his breaking strength to justify a man doing any worrying over it."

Mr. Gilbert next took up long draft. "At the Ruby mill in Gastonia, L. O. Bunton made a test making 40s combed yarn with a draft of 14.54 against a regular draft of 10 on the spinning, out of 1⅛-inch cotton, and this gave him just about the same breaking strength that he had with the 10. There was a little bit longer draft on his fine frames where he was drafting 10 on spinning, which might have counterbalanced the other.

"Marshall Dilling has made a test on 60s and found that he could throw out his jack frames, and he is drafting 8 on his fine frames, 7 on the intermediates, and 5 on the slubbers, and he is getting just as good a breaking strength on the 60s as he got using shorter drafts and four processes instead of three processes of roving.

"As to twist in roving, P. A. Smith of Gastonia has made a test which showed there was a little variation in breaking strength with ordinary variation in the twist in his roving."

One and Two-Process Drawing.

Mr. Tatum brought up a discussion of one- versus two-process drawing. He asked how many present used one-process, and no one held up his hand. Mr. Tatum said he had made a thorough test on one-process, and that while the average breaking strength was stronger, there was so much variation in the weights and in the strength, that he went back to two process-

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es in order to get the benefit of the additional doublings provided by the second process. He said that when he was in Texas, a man prominent in textile manufacturing circles in the Southeast came out there about eight years ago and made the statement that in five years a superintendent who would not run with one process of drawing would be out of a job in five years. Mr. Tatum said the way he understood the vogue for one-process drawing was that about ten years ago at a Georgia mill, a new superintendent found a bad condition in the drawing, running about 500 r.p.m., and that he cut out one process and reduced the speed.

E. M. Holt, superintendent of the Erwin Cotton Mill No. 1, Durham, N. C., asked for some discussion at this point on using two-blade beaters instead of Kirschner types in the finisher. He said he had made a test and found that the breaking strength was lower with the blade beaters, but pointed out that in the new one-process picking systems, "one machinery builder is using a two-blade beater and another is using a Kirschner and two Buckleys, while others are using different combinations." He also asked about the proper number of blows which should be given to cotton, and the distribution of those beats. With regard to one- and two-process drawing, he said he knew of a mill that is operating one plant on one-process and another on two-process and that he understands that they have not been able to tell any difference in the breaking strength and very little difference in the evenness of the yarn.

G. B. Byrd answered the question regarding beats per inch by pointing out that if you are doubling four times an 8-ounce lap, and using 50 beats per inch you are beating that much more thoroughly than if you were running four doublings of a 16-ounce lap. Regarding one- and two-process drawing, he expressed the opinion that one process at lower speed was practicable. He gave in addition a point in connection with stripping cards, saying that "instead of stripping so many times a day I strip so many times per hundred pounds; one time for 125 to 150 pounds will give good results."

Mr. Tatum brought out that in his opinion the advantage, if any, in one-process drawing, came from the reduced speed which is made possible.

W. P. Ward, superintendent, Erwin Cotton Mill No. 4, Durham, N. C., reported that he had cut from two-process drawing running 368 r.p.m. to one-process running 198 r.p.m., and that it ran very smoothly, with less waste and less labor, and that the breaking strength was just about as good. He added, however, that if he had to run single-process drawing at the former speed he would not do it.

Commenting upon the one- and two-process drawing controversy, Mr. Gilbert said he once had an overseer of carding run a test on this, and when he was called out in the mill the carder showed him three samples instead of two, and asked him to pick out the best. Mr. Gilbert said he selected one as the best and was told that this had been made without any drawing process at all!

This concluded the morning session, and the delegates were guests at a luncheon served at the Croaton Club by local Henderson interests. There was a paper on "The Lubrication of Cotton Mill Machinery," by N. M. Aycock, read following the luncheon. After Mr. Aycock's address, there was a brief practical discussion on the subjects touched upon during the morning.

J. H. Bunn, superintendent, Henderson Cotton Mills, reported that he uses a three-blade beater on breaker pickers, with a Kirschner in the finisher, and that he has a total of 90 to 100 beats to the inch. He said he had never tried one-process drawing.

Mr. Garner submitted a question as to what the breaking strength should be on 26s/2 yarn, with 12.50 turns of twist on the twister, when the single yarn broke 66 pounds. Clarence Cates expressed the opinion that this was not enough twist in the doubling.

Mr. Tatum called upon Chairman Lanier for some comments, and he said that at Oxford, "we tried one process of drawing for four months, but our work wasn't as even and was lumpy and didn't run as well, although the breaking strength was about as good as it was with the two processes. It is true that we reduced the speed to 190 r.p.m., but on account of unevenness and its not running so good we changed back to the standard two processes with a speed of 350 r.p.m., and got better results with smoother yarn and better running work."

Mr. Tatum asked Mr. Lanier with regard to humidity, and Mr. Lanier replied that he did not have any figures at hand. However, he said, "I went to a convention in Charlotte where they were talking about the improvement resulting from adequate humidification, and I came back and got them to put in a conditioning room and the yarn showed a great improvement."

"Humidity is something most of us could improve on by keeping the humidifiers in order," commented Mr. Tatum. J. J. Brown referred to the Smyre mill test on which he had reported, stating that on one of the days during the test it began to rain and turn cold, and the breaking strength on everything went up considerably.

Referring to Mr. Lanier's statement about his conditioning room, G. E. Moore, superintendent, J. M. Odell Mfg. Co., Bynum, N. C, said, "We run day and night and I notice that our sizing and breaks at night are higher than on the day run, and the yarn is naturally stronger on the wet days. Certainly it is humidity, but I was wondering if, after going through this humidity and drying out, our yarn is any stronger. Mr. Lanier referred to his conditioning room. When yarns are conditioned and a certain amount of moisture is put in, suppose that yarn is set aside, or is side-tracked for a few months and dries out. When it gets on to the next process, is it as strong or stronger than it was before it was conditioned?"

Mr. Tatum explained that, for one thing, humidity of the proper kind, during manufacture, lays the fibers down more compactly and solidly and permits the manufacture of a yarn with inherently stronger qualities which it does not lose. Mr. Lanier said that he has experienced no difficulty with losing the regain in his yarns unless they happen to be stored in close proximity to artificial and excessive heat.

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Drawing-in Draft for 3-Harness Work.

EDITOR COTTON:

There is a question in my mind as to which is the proper method for making a three-harness drill or a three-harness twill. Therefore, I hope I may see the following questions answered in COTTON sometime in the near future:

How should the selvage and body be drawn in the same harness in order to make the best looking selvage? How should the cams be run for a filling flush twill, and how should they be run for a warp flush twill? What is the best method for making a right-hand twill and the best method for making a left-hand twill?

Any discussion that your readers can offer along this line will be greatly appreciated.

I should also be very glad to see the designs that some are using for this particular type of work, bearing in mind that I want the selvage drawn on the same three harness to produce the best selvage.

CONTRIBUTOR NO. 4582.

Some of the Carder's Problems.

EDITOR COTTON:

In this letter I would like to make some suggestions as to some of the problems which an overseer of carding runs up against.

When a card gets in such a condition that it stops with the belt on the tight pulley, it should be examined to see if the cotton is accumulated between the wire of the cylinder, flats and doffer, and is forced to the foundation of the fillet. If the card is started again without stripping; the millions of neps will find their way to the top of the wire point, and thus into the sliver.

This practice is the cause of making second quality cloth in a great many of our cotton mills. Such neps appear like snowflakes on the surface of the cloth, which gives it a bad appearance, and in most cases it makes the cloth unmerchantable for the original purpose for which it was made. It should be the practice of every carder to strip properly his cards which for any reason have become clogged with stock. This will remove all of the neps and broken fibers from the cylinder and doffer fillet.

The comb boxes should be examined to see that they are not overfilled with oil. When this condition exists, the end of the comb and also the end of the doffer on the same side of the card become saturated with oil, caused by the vibration of the comb in the cut-out for its reception in the comb-box.

In passing a card that is being ground, the carder should stop and listen, and if the contact of the emery wheel can be heard, this indicates that the grinding is being done too heavily. In winter time, the combing of the doffer combs should be watched, to see if a part of the web has a tendency to follow the doffer.

This is sometimes caused by a heavy piece of lap running through. However, when such a thing happens, the overseer should ascertain whether it is a heavy piece of lap or whether the comb blade is uneven. Such heavy places coming through is one chief objection to the use of a heavy lap, because it is obvious that if a bunch or tuft of cotton, when running a light lap, will cause this heavy part of the lap to follow the doffer, then the evil is surely increased by the use of a heavier lap.

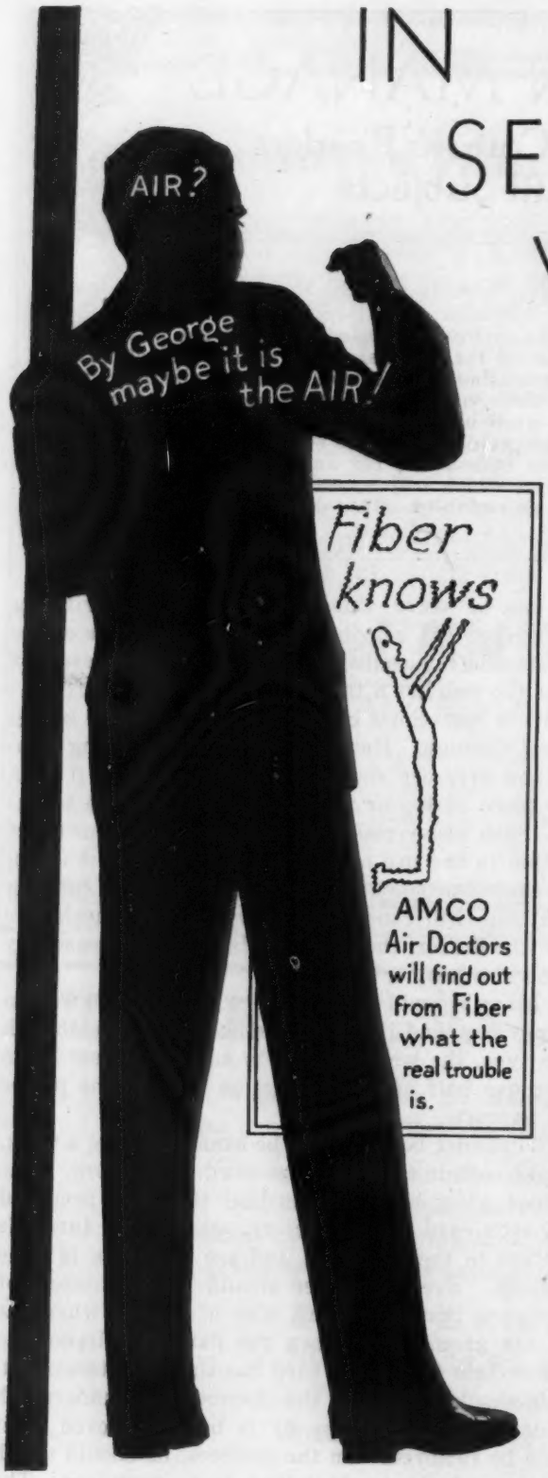
A heavy lap will cause much sagging of the web on a muggy day, and if the card should be of the 45-inch width type, the web will sag to such an extent as to return one half of the production back to the picker room as waste.

All cylinder boxes should be examined once a week, to make certain that they are filled with tallow. The overseer, after he is certain that the work produced from each card is satisfactory, should now turn his attention to the grinding, and see that this is done regularly. Every overseer should have a record of every card that is ground, also a note of when the flats are ground and when the flats are cleaned, to make certain that every card has the same treatment.

He should pull down the chamber door underneath the doffer, to see if the fly is being removed as it should be removed. On the combers, he should watch the top combs to see that they do no pounding. The machines should also be kept clean, and all top rolls examined to make certain that they are in good condition, on all machines.

Every web on the drawing frames should be watched, to see that they are not cutting out, and that the work has the proper number of doublings. If a spindle on a fly frame should be found to be idle, the tender should be questioned about it and it should be placed in operation again as soon as possible.

If roving is removed from the spindles here and there about the room, this indicates that the tension is out of order, and an explanation should be demanded



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from the frame tender for allowing a speeder to get in such a condition. He will have to admit either that he neglected calling the second hand, or that the second hand failed to change the rack. Any second hand or section man who neglects the changing of the rack gear when conditions demand it, should be immediately discharged.

MACK (N. C.)

Questions on Fly Waste in Carding.

EDITOR COTTON:

I have had trouble in my carding, which causes me to seek the able assistance of your readers.

I should be very glad to see some discussion on carding in a future issue of your magazine. And in this discussion, I would like to have the following questions answered:

What causes an excess amount of waste to fly out between the cylinder and the side arch of a card? And second, what causes too large an amount of fly waste and droppings through the mote knives on a card, the waste dropping down in little bunches?

Any suggestions that can be offered to eliminate the above defects, or the causes of them, will be greatly appreciated.

B. M. (MASS.)

Checking Up in the Card Room.

EDITOR COTTON:

We spend a good bit of time in the various rooms of the mill looking for ways to better the product and to help in the manufacturing processes. We decided that it would be a good thing to creel the drawing with full cans, instead of waiting for the sliver to run out in a can and setting in one can at a time. This did not work out as we had hoped it would, and we have drifted back to the old way. There are a lot of advantages in creeling the drawing at one time, but there are too many disadvantages and the desired production cannot be put through the frames. When an end breaks on a card and the hand goes to piece it up he gives the end a slight twist, this tends to make the sliver bunch in the can. When these bunched ends break down at the drawing it is usually at the sliver guides, the hardest place for the drawing hand to get to. For these reasons we have found it to be a better policy to watch the sliver in the cans and replace them just before the sliver runs out.

We keep our drawing rollers well cleaned. We take out the top rollers and clean the top and bottom steel rolls and the necks every other week. These rolls are oiled and greased with a good grade of Non-Fluid oil at the time they are cleaned. Between the periods of cleaning the oiler wipes them off and oils them with a heavy oil that will not flow very freely. There is a lot of tedious and good work to be done on the drawing frames in order to get the best slivers for the following processes.

We have found that when replacing gears on the calendar rolls it is best to use a gear of a finer pitch in this chain of gears. I understand that the machine builders are using finer pitch gears on the calender rolls. A smaller pitch gear insures less back lash in the gears and this will do much to make the stock the rollers are working on more even. This will make stronger yarns.

We have found that by putting up seven ends of card sliver on the back of the first drawing, and seven ends on the back of the finisher drawing, the breaking strength of the yarn is increased about six per cent.

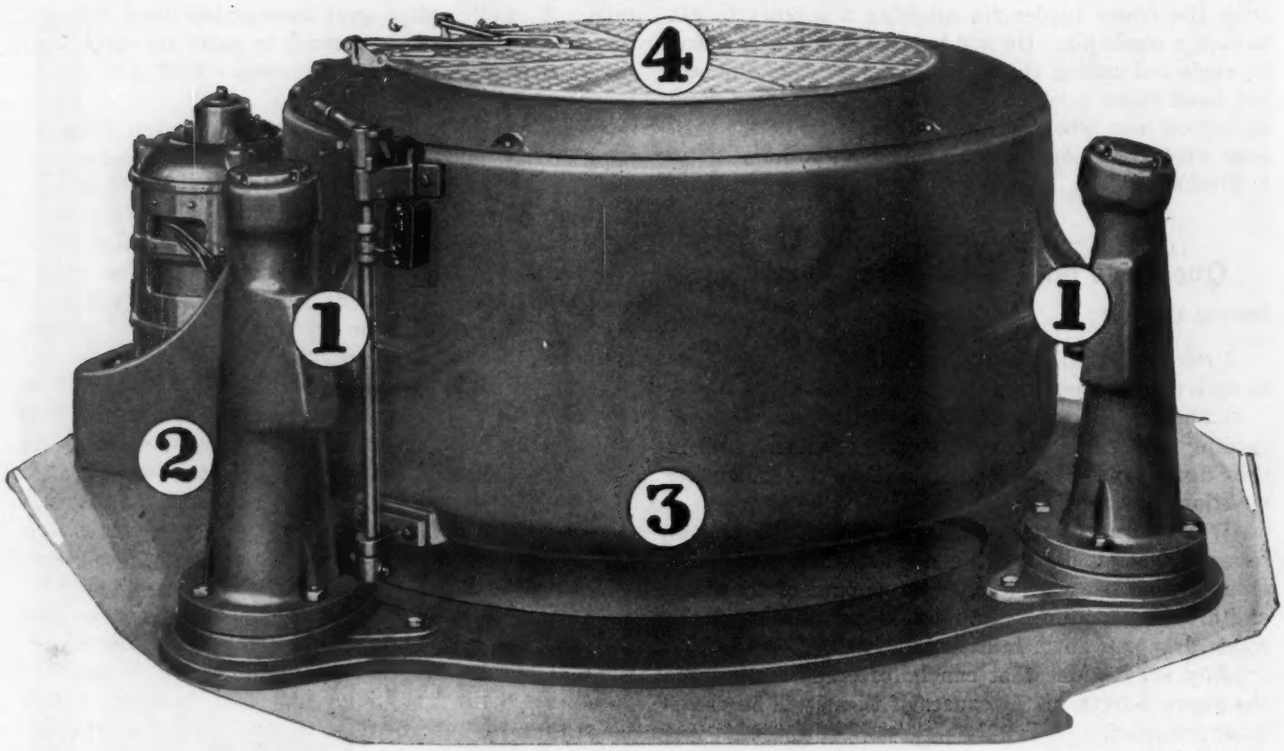
At the present time we are experimenting with slow carding. There are several stages of slow carding; some slow down the doffer speed and call it slow carding. We are going to try cutting the speed of the cylinders. Of course, we are not going to cut the speed of every card in the mill, only enough cards will be slowed down as are necessary for the experiment. At the present time we are running a cylinder speed of 165 r.p.m. and a doffer speed of 11 r.p.m., we plan to run our cylinders about 145 r. p. m. and our doffers 9 r. p. m. There have been tests of this character before, but none have been announced recently in the columns of COTTON.

I would like to see some discussion on why we run our cylinder speeds at around 165 r.p.m. You never hear of any of our readers running them otherwise, to tell the truth, I run mine that way, because I found them that way, and because my overseers from the beginning have run them that way. It may be the best speed, I do not know as I have never had a chance to experiment with the speeds before. I am going to go into slow carding thoroughly and let the readers of COTTON know the results when I am through.

We ran into some "riged" or fluted arbors, on the metallic rolls on the drawing frames. We have tried everything that I can think of to remedy this. The only thing I have found to do is to replace the worn rolls with new ones. When new rolls are put in watch closely for heavy slivers, and act accordingly on the drafts of the drawing frames. Not what the machine builders say, but the actual draft that is determined from the actual weight of the slivers that go through the rollers. The weight that is found after it has gone through the rollers is about ten per cent less than the machine builders record in their catalogs. They give something like 258 for a draft constant when it is closer to 228, so you have to figure from that. However, that is something that we all have to contend with after the machines are installed in the mill.

The front roll speed of the drawing should not be over 300 r.p.m., especially if the rollers are worn. If the machines are new and in good condition they can be run at a higher speed, but care must be taken in speeding up old metallic rollers on drawing frames, to avoid chattered and zigzag slivers. These conditions will cause uneven slivers. It may be that the imperfection is so small that it cannot be noticed with the naked eye, but the trouble is there just the same. The big things that are wrong in the mill are now things of the past, we must be on the lookout for the little things at all times now.

The can tables must be adjusted so that the cotton will coil in the cans evenly, so the slivers will stick together as little as possible at the next process. A little sticking here and there doesn't seem much, but dur-



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ing the course of the day's run it will make many defects that will show up in the finishing plant.

Keep the clearer boards clean, wipe out often around the rollers and see that the oiler does his duty in the oiling of the frames. Years ago they did not pay much attention to the oilers, but today they do. One oiler is worth two wrenches, and the machines will continue in operation as the days go by. More and more the industry is paying by the hank clock or punching the clock at the entrance of the mill. The margin of profit is so small that the industries must shave everything to make the ends meet.

CONTRIBUTOR NO. 14.

Life of Pickers and Shuttles on Duck.

EDITOR COTTON:

This answers the inquiry of "CONTRIBUTOR NO. 4565," who asked for figures with reference to the life of shuttles and pickers on Modified D Draper looms on 7 to 14-ounce duck.

We are making this class of goods on these looms, and with reference to leather pickers, I would advise that we have a varied experience. The number of pickers used depends entirely on how good the loom fixer is. For instance, on one section of 48 looms we used 168 pickers in six months, and on another section of 48 looms we used only 36 pickers in six months, but our general average is between five and six pickers per loom per year.

With reference to dogwood shuttles, I notice that your contributor specifies dogwood seconds. We do not use seconds, buying firsts, and we have the same experience with shuttles that we do with pickers, namely, it depends on how well set the shuttle is to the loom, and the care in which the loom fixer bristles and sets his shuttles to the box. For instance, on one section of 48-40-inch Modified D looms, we used 100 shuttles in 17 months, and on the next section to this one, which also had 48 looms, we used 25 less shuttles in the same period of time.

Our general average of shuttles used shows about 1 1-2 shuttles per loom per year. I might say that we have not always had our shuttle account as low as this.

It might be interesting also to explain our method of keeping tab on these supplies. This matter is handled entirely through the supply room, as far as the number of shuttles charged to each section is concerned. The shuttles are dated when taken out from the supply room, and put into the loom, and also the loom number is marked on them. When a new shuttle is needed, the loom fixer carries the old shuttle to the overseer or second hand and secures an approved order to the supply room for a new shuttle. This gives the ones in authority in the weave room an opportunity to examine the shuttle and see whether in their opinion the shuttle has had the proper care and attention in the room.

The supply room furnishes to the weave room overseer a weekly report of the shuttles used, and if an unusual amount of shuttles is charged to one section, this immediately causes an investigation. In several instances we have found that maybe one or two looms not properly adjusted, were using more than all the other looms on the section put together.

I would be very much interested in seeing other mills' figures on this subject.

CONTRIBUTOR NO. 4566.

How About Unweighted Middle Rolls on Coarse Numbers?

EDITOR COTTON:

I would like to ask, through your "HOW OTHER MEN MANAGE" department, what changes might be made in my layout to improve the end breakage and increase the life of the leather rolls.

I am spinning 8s and 9s warp from Low Middling 7/8-inch cotton, 1.30-hank intermediate roving, filling wind, 2-inch ring, 7½-inch traverse, and am using the self-weighted middle roll. On the 8s, my front roll speed is 180 r.p.m., and 170 r.p.m. on the 9s.

The diameter of the bottom rolls is: front roll 1-inch; middle roll 7/8-inch; and back roll 7/8-inch. I use a 1-inch setting between the first and second rolls. The self-weighted middle top roll is the regular middle roll turned down, and the length of the weight lever over all is 5¾ inches. The distance between the fulcrum and the notch of the lever (weight end) is 4½ inches and the distance between the lever screw end of the lever and the fulcrum is one inch. The weight of the roll weight is 3½ pounds. We use the Dixon adjustable saddle, with solid top front rolls. The gauge of the frame is 3½ inches, and we use a McMullen medium No. 2 spindle, the speed of which is 7500 r.p.m. We put 13½ turns of twist per inch in the yarn, and the top rolls are oiled three times per week.

This is my first experience with the self-weighted roll on coarse numbers, and I would like to hear from others through this department on this subject.

CONTRIBUTOR NO. 4571.

Counting the Warp and Pick in Cloth.

EDITOR COTTON:

You have been publishing some discussion recently with reference to the correct method in counting the warp and pick in the cloth. The man in your discussion department who originally asked the question was wondering whether it is correct to count the ends near the selvage or in the middle of the cloth. Several different methods have been published in your "HOW OTHER MEN MANAGE" department; in fact, you published a reply from me in the March issue, on page 533.

Since that time, I have been furnished with the standards of the Federal Specification Board for this purpose, and as a matter of interest in connection with this discussion, I am taking the liberty of sending these along to you below:

The actual number of threads in one inch of cloth shall be counted in each direction at three different places in the cloth, and the result averaged for each direction. Where the thread count is under 50, the actual number of threads in three inches shall be counted for each direction at three different places in the cloth and the results reduced to threads per inch,

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and averaged for each direction.

When the size of the sample permits, these counts shall be taken about 6 inches apart.

No *warp* reading shall be taken at less than eight inches from the selvage.

CONTRIBUTOR No. 4078.

Proper Sizing for Duck.

EDITOR COTTON:

I should be very much interested in seeing in the "HOW OTHER MEN MANAGE" department some discussion as to the proper amount of size to be used on 8- to 14-ounce duck. I would be glad to see the figures from mills indicating what is actually being done to secure the desired results on this class of work, and would also like to have the sizing formulas used in applying size to these goods.

CONTRIBUTOR No. 4578.

Disagrees on Roll Weighting.

EDITOR COTTON:

On page 659 of the April issue of COTTON, "H. H. (MASS.)" describes a method for determining the pressure on top rolls on spinning frames.

While the principles were correctly stated, there was a serious mistake made in the subsequent calculations, and I would like to submit proof of this contention.

The first two sketches herewith, Fig. 1 and Fig. 2, appeared with "H. H.'s" article in the April issue of COTTON, and Fig. 3, which I have added, represents a schematic drawing of Fig. 1.

The principle stated by "H. H." was that moment arms should be measured at right angles to the lines of force.

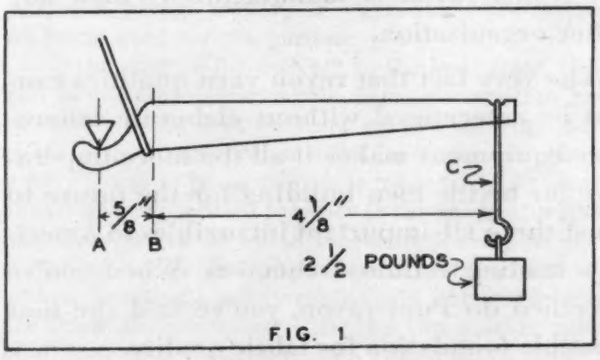

FIG. 1

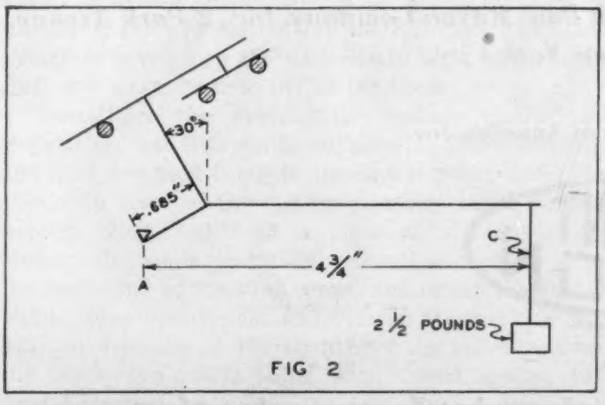

FIG 2

Thus, in Fig. 3,

AD (moment arm of lever ABE) is at a right angle to ED

AC (moment arm of lever AB) is at a right angle to CB

Angle d = 22 degrees (Fig. 1 and Fig. 3).

Angle d is formed by CB (centerline of stirrup) and XX, which is perpendicular to the lever AB. It should be noted that XX need not always be perpendicular to the moment arm AD as one might be led to suppose.

The known quantities are:

AD = 4¾ inches = 4.75 inches
AB = ⅝ inches = .625 inches
W = 2½ pounds
Angle d = 22 degrees (30 degrees in Fig. 2)
and as Angle ABX = 90 degrees
and Angle ACB = 90 degrees

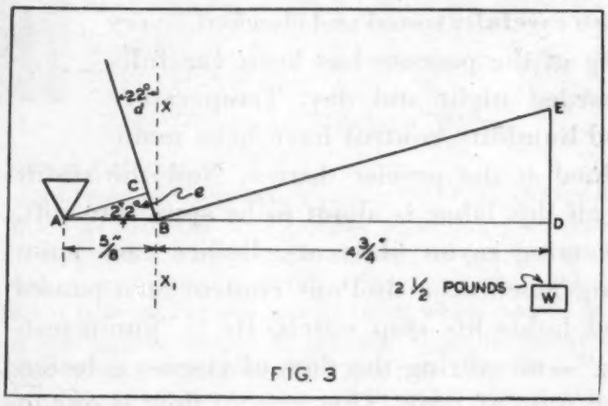

FIG. 3

it follows that

Angle e = 22 degrees

We thus have

$$\frac{AC}{AB} = \text{Cos } e$$

$$AC = \cos e \; AB = .927 \times .625 = .579$$

The final solution, if we let x represent the weight of the top rolls, is:

$$\frac{x}{AD} = \frac{W}{AC}$$

$$x = \frac{W \times AD}{AC} = \frac{2.5 \times 4.75}{.579} = 20.51 \text{ pounds}$$

And if we let Angle d = 30 degrees (as given by H. H. in Fig. 2), we have

$$AC = \cos 30 \text{ degrees} \times AB = .866 \times .625 = .541$$

$$x = \frac{W \times AD}{AC} = \frac{2.5 \times 4.75}{.541} = 21.95 \text{ pounds}$$

"H. H." on the other hand gets

$$x = \frac{W \times AD}{AC} = \frac{2.5 \times 4.75}{.685 \text{ (Fig. 2)}} = 17.34 \text{ pounds}$$

The difference is large enough to call for a correction.

F. A. F. (N. C.)

Denier and the stop watch

THE viscose solution has traveled from the ripening tanks to the spinning apparatus. Every ingredient has been carefully tested and checked. Every step of the process has been carefully guarded night and day. Temperature and humidity control have been maintained at the precise degree. Now the result of all this labor is about to be spun into soft, gleaming rayon filaments. Before each spinning machine a du Pont control man pauses and holds his stop watch. He is "pump testing"—measuring the flow of viscose solution per unit of time. This rate of flow is one of the most important factors determining accuracy of denier. If the flow from any pump is not exactly up to standard, that pump must be readjusted to deliver the correct amount of viscose solution.

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Methods of Splitting Cloth on Loom.

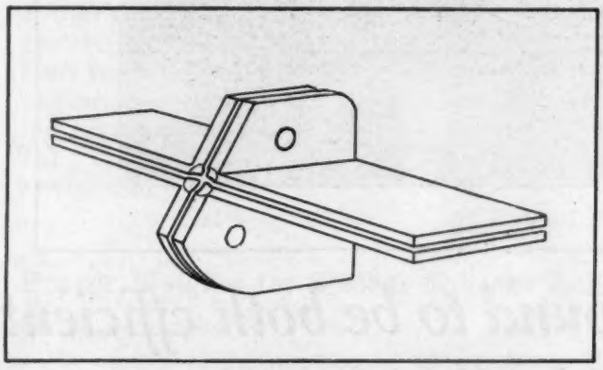
EDITOR COTTON:

On page 305 of the January number, "CONTRIBUTOR No. 4102" asked for information concerning the best method of splitting cloth. He wanted to know which is better, to split cloth on the loom by means of a cutter, or in the cloth room.

Perhaps if he had given an idea of what the cloth is used for, whether it is finished before use, etc. it would have been easier to answer his question.

I notice that in weaving, he is allowing a number of empty dents to show the splitting mark. It is not necessary to leave more than two or three empty dents, this depending on the counts of reed used, a fine reed requiring three dents, and a coarse reed requiring two dents.

If the goods are for export, or for even home trade, it is as well to examine the sample of cloth needed before making, to see if there is a split selvage, that is, a series of double ends and a couple of lock stitch



ends at each side of the cutting mark. If so, this needs a special selvage motion, of which there are several, all being good for the purpose.

If the cloth is for delivery in the loom state, if he can be certain of his lengths, being correct, the best method is to cut it at the loom, using a splitting knife at the breast beam. One method for doing this which I have found to be successful, is made with two pieces of cast aluminum fitted together in the shape of a Maltese cross, as is shown in the accompanying sketch. By taking out the two screws which hold the cross together, inserting a safety razor blade (the screw holes are made to correspond with the two outside holes on a razor blade) he can make a gadget which is quite handy and safe to use, and with which there is no danger of the weavers cutting their fingers. The blade holder is beveled on the underneath side, to allow all fluff and waste to drop off of the blade.

Sometimes the device may become blocked or clogged up, but it is easily adjusted in a few seconds, and does not need tying to the breast beam, as is the case with some of the old style cutters made from a wooden block and with a piece of straight razor blade. All that is necessary is to cut an inch or so at the beginning of weaving a cut, and insert the cutter which rides on the cloth and cuts up the mark by the gradual drawing of the cloth onto the roller against the blade, the cutter being firmly fixed against the breast beam.

If the goods are for finishing, then the best idea is to weave the cloth as usual without any empty spaces, and let the finisher cut the cloth as he rolls it for the packing room, that is, leaving out the empty dents, provided no selvage is needed. They can be cut in the rolls by means of a band knife such as converters use.

Sometimes the goods are run onto a machine somewhat like a tenter, having clips, but much shorter than the ordinary tenter. This runs at a high speed, and the cloth, after leaving the clips, passes over a flat plate onto one or a series of revolving knives (somewhat like a circular saw without teeth). The knives are revolving at a rapid rate of speed. The cloth is drawn over them onto a roller or several sections of rollers, either of wood, paper or fiber. The knives are adjustable for any width and can be taken off if not in use. They are fastened by means of a set screw onto a keyed shaft. The knives are easily sharpened by a whetstone. Sometimes the cloth is cut by hand, which is a rather tedious job and rather too costly.

CONTRIBUTOR No. 4078.

Soft Places in Hosiery Yarn.

EDITOR COTTON:

In reply to the question put by "C. J. L. (TENN.) in the January issue of COTTON regarding the cause of soft places occurring in his hosiery yarn, may I venture to suggest, in the first place, that the trouble would indicate variable loss of twist, which may be in all probability caused by spindle slippage through slack tapes or bands, or there is a possibility of dirty spindle whirls, several of which may be packed with dirt, thus increasing the diameter around which the tape or band runs; hence, loss of speed, which will result in loss of twist.

The foregoing is, of course, a common defect, though perhaps worthy of investigation.

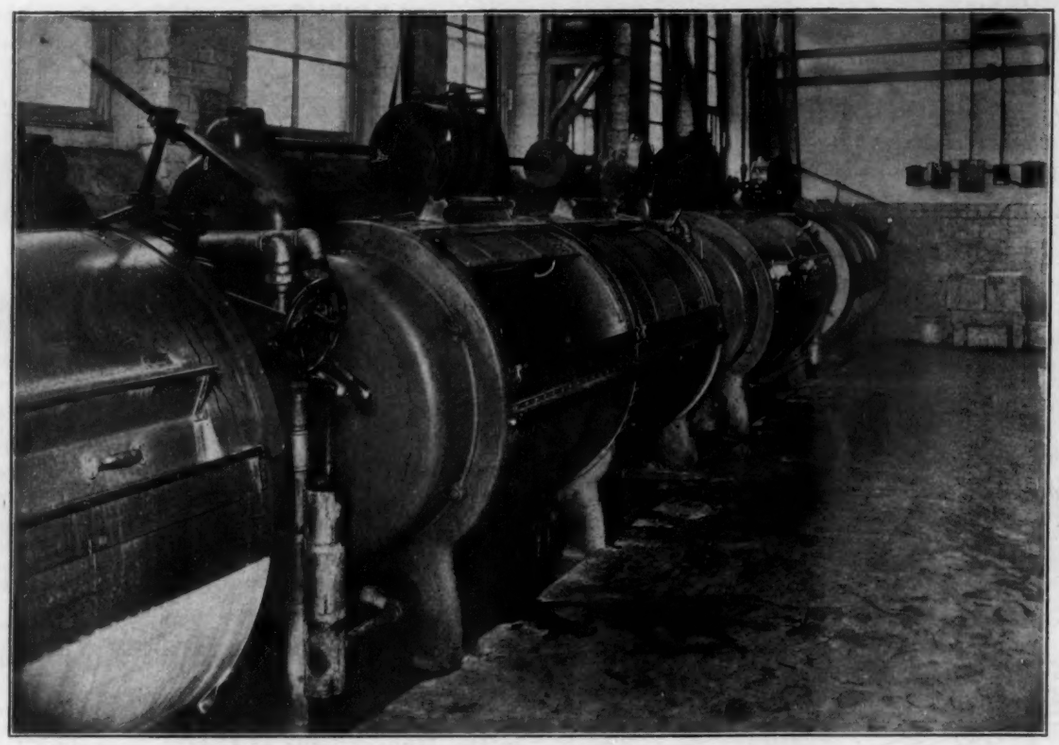
Now a very peculiar thing in reference to twist on a ring spinning frame is the effect of the winding-on principle upon the twist. Of course this point may not touch our friend's problem, but I wish to mention it in order to arrive at a point which may be worthy of recognition in his difficulty.

However, this effect of the winding-on principle on the twist is that, for every coil of yarn wound upon the bobbin during spinning, there is a loss of one twist in the yarn. This loss is only recovered when the yarn is unwound over the nose end of the bobbin. In twist calculations the loss of twist in most cases is ignored, though in others, it is taken into account, and by presenting the following calculation I will show a suitable method of accounting for the loss of twist.

Example:—Speed of spindles 8,400 r.p.m. Front roll delivers 400 inches per minute, and the average circumference of the winding-on part of the bobbin is 2.8 inches.

Hence, (1) $400 \div 2.8 = 143$ revs. lost
(2) $8{,}400 - 143 = 8{,}257$
and (3) $8{,}257 \div 400 = 20.6$ turns lost

which is about 1.7 per cent loss of twist, shown as follows:



Group Drives have been found to be both efficient and economical for laundry service

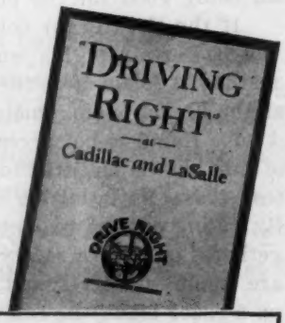
GROUP drives are popular in the laundry field and well they might be. The lineshafts are operated at about 250-R.P.M., permitting easy reduction from a 900 or 1200-R.P.M., motor. From four to six washers are driven from a single motor-driven lineshaft, depending upon size of units. The washers are loaded and emptied in sequence so that during part of the washing period one of the machines is idle.

When individual drives are used a single machine would require from 5 to 7½ H.P., whereas a group drive of six machines can be handled with a 15 to 25 H. P., motor. With belt drive the "pound" of the clothes in the washer is absorbed by the belts and is not transmitted back to the motor, which means longer motor life.

DRIVE RIGHT

POWER TRANSMISSION ASSOCIATION

Send for copy of this booklet



Please send me the booklet Driving Right at Cadillac-LaSalle

Name _____

Position _____

Firm _____

Address _____

CHARLES BOND COMPANY
Leather Curriers, Importers and Manufacturers of Leather Belting and Textile Leathers
617 ARCH ST., PHILADELPHIA, PA.

Group Drive for Power Efficiency and Economy

$$\frac{143 \times 100}{8400} = 1.7$$

The reader, I hope, will understand that 8,257 represents the revolutions of the traveler, and now this brings me nearer to another suggestion for a remedy for the trouble.

It is generally believed that the travelers are instrumental in putting in twist into yarn when spinning, so I am inclined to think that perhaps our friend is not using a suitable traveler for his class of work. Possibly they are too heavy. As I mentioned at the beginning, his trouble suggests loss of twist, a variable loss, and this can occur during winding-on, being at its greatest when the yarn is being wound onto the bare bobbin. The greatest strain occurs at this point through the yarn having to drag the traveler around the ring at a greater angle. Therefore, a heavy traveler will increase this strain. Probably our friend will locate the cause right there by a change of travelers, and in passing, I might suggest, if he has not already done so, that he ought to try the square-pointed traveler. Also, I think a check up on twist and draft gears, as to whether these gears are performing properly, and not skipping, through worn teeth or being improperly meshed, would perhaps prove beneficial. The same could be done in the card room or the roving frames.

D. E. (R. I.).

Proper Weights for Slasher Squeeze Rolls.

EDITOR COTTON:

In answer to the question of "CONTRIBUTOR No. 4084," with reference to the proper weight of squeeze rolls to use on slashers, will say that the 285 pound rollers he is now using should be heavier, for his 15s yarn.

We decided, in our mill, that our slasher rolls were too light and began to look around for a method to heavy up on them. At first we had a lever over the arbor of the roll with one end weighted down. This served to give us part of the effect we were seeking, but was not as heavy as we desired. This method of weighting the slasher rolls was very hard on the slasher blankets as the rolls had a tendency to drag instead of rolling, this would cause the slasher blanket to wear out in a very short time.

The next change we made in the slasher squeeze rolls was to do away with the lever and weights that we had been using previously and to enlarge the rolls themselves. We are now using 800-pound rolls. This has proved the most satisfactory of all the methods we have tried for increasing the squeezing action of the rolls. The advantages of using the larger roll are several, namely: With the larger roll the yarn is subjected to the action of the rolls for a longer time, and this gives better penetration of the size into the warp; the warp dries better; there is less shedding of the size under the looms; and we are getting around two per cent more size in our warps now than when we used the lighter roll with no change in our method of cooking or mixing the starch.

We now use the 800-pound squeeze rolls on all our slashers, both front and back rolls. Our yarn numbers run from 12.5s to 26s, and the sets will have from 968 to 5,000 ends in them. We have found that the heavy roll acts equally as well on the smaller sets as it does on the ones with a large number of ends.

We have made no change in our method of clothing the slasher rolls since changing to the heavier roll. We use a 13-ounce slasher blanket about four yards long; this is wrapped on a base of sheeting.

On the type of work that "CONTRIBUTOR No. 4084" is running I think that he would get better results from squeeze rollers weighing about 450 pounds; he could go up to 800 pounds, I believe, without injuring the quality of his work. Frankly, I think that the roller is too light for the work he is running and would set 450 pounds as the minimum weight to run. I am sure that he will find he is getting a better looking yarn, a drier yarn with a larger per cent of size in it and less of the starch under the looms in the weave room.

CONTRIBUTOR No. 4569.

EDITOR COTTON:

"CONTRIBUTOR No. 4084" is right in his doubts—the 285-pound squeeze rolls he is running on 15s yarn, 1,960 ends per set, are too light. With a roll of that weight the size is coated on the outside of the yarn with very little penetration.

We run our sets with 3700 ends of 32s yarn, and use a 400-pound squeeze roll in the back and a 350-pound roll on the front. We have secured very good results with rolls of this weight. The rolls are covered in the usual manner.

The back squeeze roll should be heavy enough to squeeze all the size possible out of the yarn so that it will act as a suction when it comes in contact with the next squeeze roll. I believe that the last squeeze roll should be lighter so that it will leave a protecting coat of size on the yarn for weaving.

CONTRIBUTOR No. 4092.

EDITOR COTTON:

We are running 21s warp, and our sets range from 1,300 to 2,272 ends per set. We use squeeze rollers on our slashers that are between 570 and 600 pounds, and we believe we are getting good results, much better than we did with lighter rolls. This information is given in response to "CONTRIBUTOR No. 4084" in a recent number as to the weight of squeeze rollers on slashers for 15s yarn with 1960 ends per set. I would recommend that he try rollers weighing between 575 and 600 pounds.

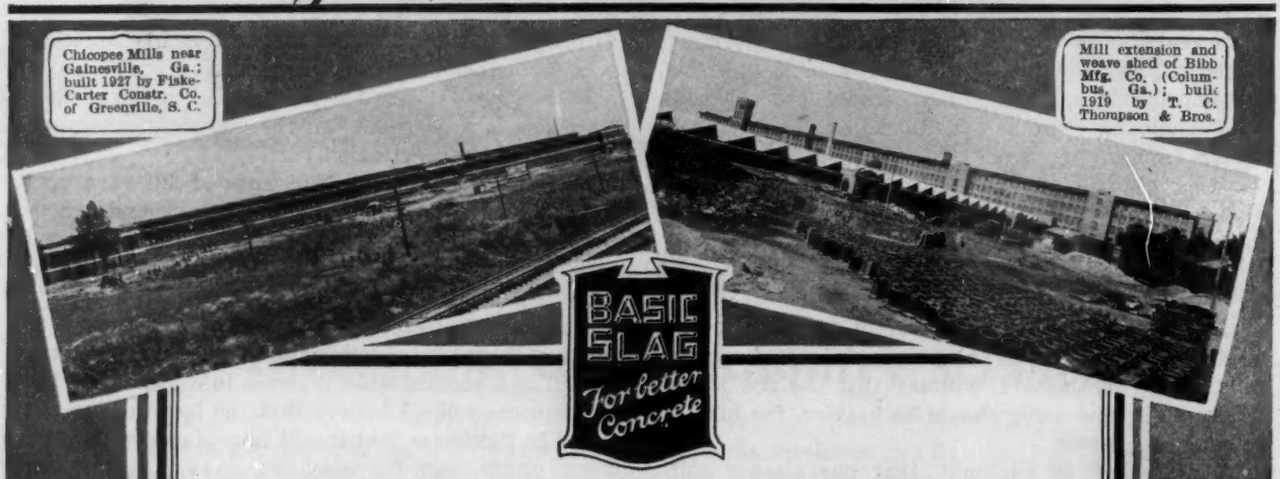
E. R. (S. C.)

EDITOR COTTON:

Replying to "CONTRIBUTOR No. 4084" who asks for some opinions regarding the proper weight of squeeze rolls to use on slashers. He does not say whether his yarn is of regular, soft or hard twist; nor does he state what trouble he is having, if any. His sets are of 1,960 ends of 15s yarn. His rolls weigh 285 pounds each, and he says that it seems to him these are too light.

If his yarn is of regular warp twist, his rolls *are*

South's Largest TEXTILE MILLS


Chicopee Mills near Gainesville, Ga.; built 1927 by Fiske-Carter Constr. Co. of Greenville, S. C.
Mill extension and weave shed of Bibb Mfg. Co. (Columbus, Ga.); built 1919 by T. C. Thompson & Bros.
BASIC SLAG
For better Concrete

THE seven million dollar plant of Pacific Mills at Lyman, S. C. The immense mill extension and weave shed of Bibb Mfg. Co. at Columbus. The three million dollar plant of Chicopee Mills near Gainesville. All of the buildings that house these great textile finishing industries have been made permanent and fireproof through the use of our Blast Furnace Slag in reinforced concrete.

Permanent through the close kinship between basic slag and Portland Cement, producing concrete of unusual strength. Firesafe, in that basic slag is itself fireproof. Economical because concrete slag is lighter—from 300 to 600 lbs. per cu. yd. than any other standard concrete aggregate.

These are the facts that have influenced the use of our Blast Furnace Slag in modern, reinforced concrete mill construction. Our engineering staff will be glad to submit further data!

Birmingham Slag Co.

Slag Headquarters for the South

ATLANTA BIRMINGHAM JACKSONVILLE
THOMASVILLE MONTGOMERY OCALA, FLA.

too light, for they will squeeze the size to the center fibers. I have dressed 15s yarn with very little success, the rolls weighing, first roll 270 pounds and the finisher roll 325 pounds.

If the yarn is of hard twist, I would suggest that his rolls be changed, to be first roll 375 pounds and finisher roll 450 pounds. If the yarn is soft twist, he should use but the finisher roll and hang 100 pounds weight on it instead of 75 pounds.

In all three cases I would set a constant size box temperature of 180 degrees; large cylinder 216 degrees; small cylinder 230 degrees. The speed for the regular soft twist should be 38.5 yards per minute, and for the hard twist two-thirds of this speed or 25.5 yards per minute.

R. W. (CONN.)

EDITOR COTTON:

This is in answer to the question of "CONTRIBUTOR NO. 4084," who asked in the December number for some suggestions with reference to slasher squeeze roll weights. He said his sets are of 15s yarn, 1960 ends per set, and his rollers weigh 285 pounds each. He wanted to know whether the readers think these are too light.

At the present time we are using on our slashers on the front squeeze roll—that is, the roll nearest the cylinder—a 500-pound roll, and on the back roll a 350-pound squeeze roll. We started doing this something over a year ago, as we found we got better results with these heavy rolls.

We find that the 500-pound roll (which is the last roll the yarn goes between before going over the cylinder) would squeeze any excess size from off the yarn and not cause it to be glazy and sticky. We found this would give us a better finish on our goods, in fact, we like the general results much better with these heavy rolls.

Before we adopted the heavy rolls, our rolls were as follows: 350-pound roll on the front and 250-pound on the back. I see no reason why "CONTRIBUTOR NO. 4084" should not get good results with these same weight rolls we are now using, as we run considerable 14½s and 16s yarn and get good results.

CONTRIBUTOR NO. 4089.

Figuring the Eyes in Harness.

EDITOR COTTON:

I recently saw in COTTON an inquiry as to a method of figuring the eyes per shaft for a six harness broadcloth. The most important thing to get first is the width in the reed. A fabric of this construction would probably be set about one inch wider in the reed than the cloth width. This is the way I would figure the eyes per inch on the cloth given in the question, which was a 144 sley broadcloth, 5,350 ends, 37 inches wide:

144 × 37 inches + 32 for selvage = 5,360 ends, which require 5,360 eyes.

$$\frac{5{,}360}{38 \text{ inches (in reed)} \times 6 \text{ shades}} = 23.51 \text{ eyes per inch.}$$

I. W. (CONN.)

Preventing Double Picks and Snarled Ends.

EDITOR COTTON:

In reply to the question of "CONTRIBUTOR NO. 4127", who asks for advice on how to prevent double picks, as well as snarled ends of filling coming in the cloth at the transfer of the quill. In answer to this question, I would say that there is only one solution, and that is, to put feelers on the looms. Feelers are built to prevent double picks and installed on the looms for this purpose.

However, two filling forks will prevent a whole lot of double picks, but perhaps the looms are not equipped with these so that would let that way out, but the two forks are the only thing that I know that will help in this trouble.

To my mind there is not much chance to prevent the filling snarling as the last few rounds of yarn on the quill slip off. I remember thirty years ago, when automatic looms were crude, I had some trouble trying to weave a nice piece of goods. The double picks were bad, but were not so bad as the snarling or bunching at the ends of the quills; these ruined the cloth. I made the weavers or battery hands cut the filling at the bottom of the quill so that the filling would run out where cut. Of course this made waste, but a clean double pick if it happened to run out that way.

This is about all I can say in regard to this question except to *get feelers*, but do not think that the trouble will be over even then. There will always be that everlasting fight to keep the waste down by keeping the bunch perfect.

C. W. (ALA.)

EDITOR COTTON:

In answering the questions advanced by "CONTRIBUTOR NO. 4127", it will be necessary to treat this subject from several different angles. The questions are important; that is, prevention of double and snarled filling at filling change on automatic looms making sheeting without use of feelers.

The automatic loom is a great machine and will perform well under reasonable requirements. The contributor's question, however, takes the automatic loom at its weakest point. There is a great deal that can be done to minimize the trouble mentioned. If the trouble warrants the expenditure, the best thing to do is to equip these looms with feelers, but the question is—can it be done without feelers?

Frankly, we do not think so entirely, but the trouble may be minimized as follows: Make the best filling possible properly conditioned on a suitable quill using a shuttle eye that will thread easily. This will remove a great deal of the filling breakage and mischanges of filling. See that shuttles are properly boxed to prevent rebounding, remove, if any, leathers from lay, which loom fixers sometimes tack on the lay near the filling fork to prevent kinky filling. This leather will prevent the filling knife from properly performing its function, causing long ends of filling to weave into the selvages at filling changes. See that rocker shaft boxes are in good condition and lays well

COLOR

What has caused the wonderful come-back in cotton goods. Stylists tell us it's color. Compare the cottons of today with the cottons of four years ago. The difference is — Color.

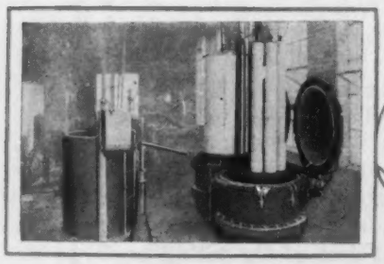
Mills which have seized upon color as a selling point — have foreseen the demand, are leading a parade of profit.

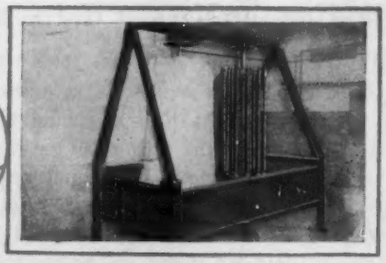
Who would ever have thought to see conservative bankers in golf club locker rooms with blue or red or green, striped or color running trunks? Color has gone far in three short years but is still in its infancy.

The mills which are close to the consumer, who are watching the big markets are relying upon color to make the consumer buy today and again tomorrow where the style changes from green to pink — or blue.

Your mill has the same possibilities to cash in on color.

COLOR SELLS THE GOODS





Gaston County Equipment has solved the color problem of many a textile mill. The Combination Beam and Package Dyeing Machines give you range and accuracy. Other Gaston County products include machines for Beam Drying, Beam Winding, Beam Dyeing, Package Drying and Package Dyeing. Consult us on your dyeing problems. We will be most glad to consult with you.

GASTON COUNTY DYEING MACHINE CO.

STANLEY, N. C. - - 306 INDEPENDENCE BLDG., CHARLOTTE; N. C.

lined and level. Next examine take up pawls and set them so as not to take up at filling change but merely to hold the cloth while the filling is changing. This will require proper and nicely set up gears at this point, and require good fixing. All worn gear studs should be removed which will give positive and smooth change. Next inaugurate rigid inspection system of shuttles, batteries, etc. that may be causing broken or mischanging filling.

Compliance with these suggestions and close inspection in the cloth room and removal of all defects possible may enable the contributor to make a salable piece of goods.

CONTRIBUTOR No. 4131.

Another Salesman Speaks Up.

EDITOR COTTON:

That wise old bird, the owl, is to be envied somewhat. Nature so endowed him that he can turn his head completely around and get a clear vision in all directions. It is regrettable that the human family has, by indifference or inactivity, lost the use of faculties that also once gave them this advantage; the advantage of clearly seeing all sides.

During the past few months, your discussion columns have carried discussions of "pests," otherwise referred to by my fellow scribes as salesmen, so, is it not in order for us to look at the other side of the matter of buying and selling, and not let the "pests" take all the blame?

The buyer, if intelligently serving his company, is, or should be, equipped with such faculties of foresight and generalship as will enable him to radiate efficiency to his subordinates, who can "carry on", without the boss getting "fussed up", when the minister or a salesman drops in for a few minutes' interview.

Taking the buyer's viewpoint, it is sometimes hard to get a real good reason for admitting a salesman at all. The salesman is more or less aggressive, because he is paid to be. He is more or less well posted on the articles he is offering for sale, and, in some cases, we find him so well trained in his own line, and from contact and observation so thoroughly equipped, that he makes embarrassing moments, not maliciously, but honestly trying to break through the reserve or "front" which the buyer assumes. Well do I remember a call I once made, when I barely got inside the door before I was told, with great impressiveness, that the buyer was so extremely busy it would be impossible for him to give me any time, etc., etc. I was followed by another "pest", and I stopped to get a drink of water. And passing under the transom of the closed door, I caught a few words of greeting given this other "pest"—

"Hello Bill! How's your golf game now? By the way, I got those foot-ball tickets, and sure appreciated them."

Both sides of the game have their amusing phases. We all put on "front" and "tell the world", when deep down in the inner-man, we know we are just "throwing dust", for appearance's sake. Oh, what small atoms we are!

A salesman often keeps a straight face, even though he be ready to explode with amusement, when he happens to call on some fellow who immediately begins to broadcast a verbal smoke-screen to hide his incompetence, and the real kick comes when we see the pomp and splendor of his importance budding forth as the thumbs reach for the trusty arm-holes and hear the creak of the springs of the office-chair as we get the "rearback" and hear the overworked expression,

"No-o-o, we have contracts on This-or-that, and our buyer, at So-and-so, does our buying."

Oh, to be captain of one's own soul!

One fellow said to the writer,

"No-o-o, we have bought from one concern for twenty years, and hope to live another twenty and do the same thing."

It is needless to say that I answered, "I hope you don't," and, incidentally, that fellow is now in a subordinate position, with a *progressive* man filling his place, a fellow who has the time to investigate competitive markets and the moral courage to look into the merits and demerits that go hand-in-hand.

A story of comedy, winding up with tragedy, could be written around a call which the writer once made on a fine old gentleman in one of the southern mills, and the story, taking the high spots, would run something like this:

I approach, hat-under-arm, samples in one hand and portfolio (for front) in the other.

"Good morning! Mr. X. (I got his name from the gate-keeper). I'm So-and-so, representing the largest . . . . etc.—bull and more bull."

The dialogue then switches.

"Young man, I'm mighty glad you came in, but you must be a new man in this territory. I came from up East years ago, and for years up there, we bought from a certain concern, and sentiment reaches so deep in me that we have continued for a great number of years, and if your prices were 20 per cent better, we would still stick."

He reached for a sample that I was rolling around in my hand for bait, and asked,

"What's your price in case lots?"

I named a ridiculous figure, and he immediately "buzzed" for a fellow out in the mill, or so I judged, for I noticed, when he came in, that his flowing, or sweeping, mustache was plentifully mixed with lint. The following conversation ensued:

"Jim, look at this. It's a beautiful article; believe I'll buy you a case."

"Yes, it is, but . . . . Wonder if the goods come up to the sample?"

"We-l-l, I don't know, the ones we get from So-and-so are mighty good. That fellow comes around to see me every now and then, and I like his stuff."

The sample was returned to me. Mustache retires. I shuffle my stuff together, pick up my hat and sneak toward the door. In an effort to revive me, he pulled this verbal baby-ease stuff:

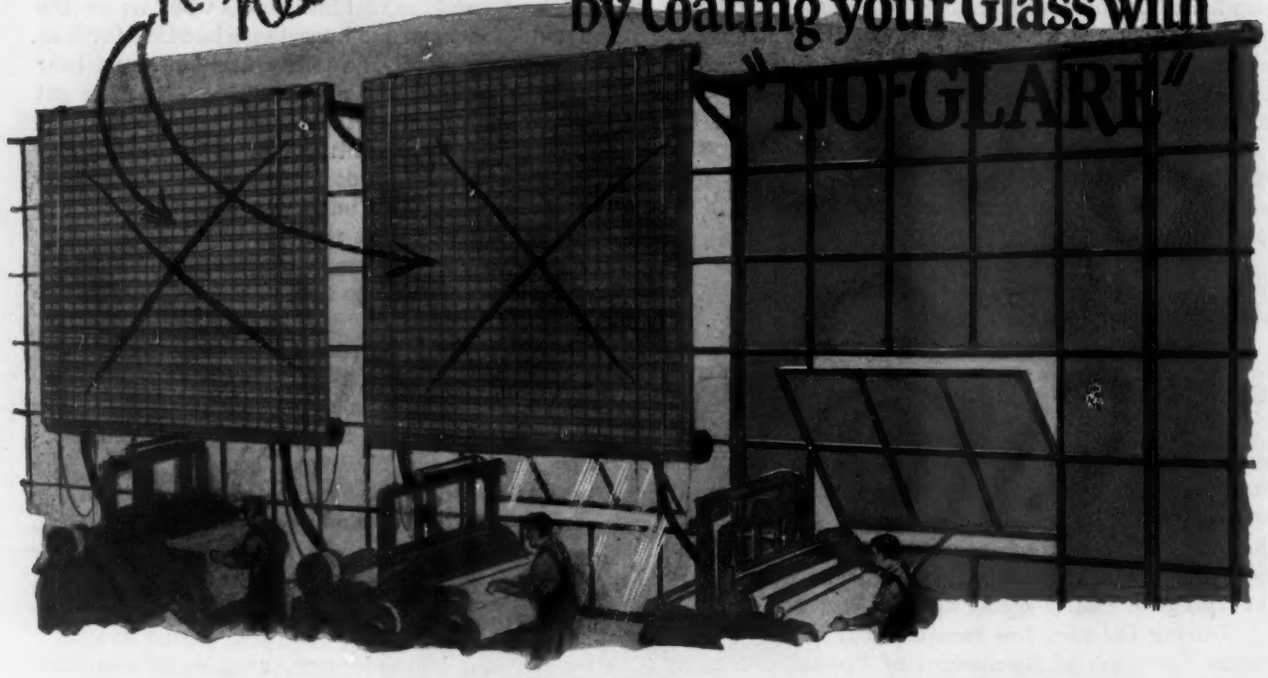
"Young man, I'm always glad to see you fellows. Drop in any time."

Why can't we all drop this "front" or pretense, and be ourselves, for a child could have seen that this fellow had not the courage to displease a subordinate

SAVE SHADE EXPENSE

Not needed

by Coating your Glass with "NO-GLARE"



No-Glare Filters Out 10° to 15° of Heat—Yet Admits 94% of Light!

MODERN mechanical window shade equipment costs a lot of money these days—both for installation and upkeep (repairs and replacements).

All this heavy expense can be avoided by simply coating your glass with *SKYCO No-Glare.* It saves its slight cost many times over in one season.

SKYCO No-Glare

is a sky-blue liquid that you paint or spray on the glass of your windows and skylights. The resulting film of *No-Glare* FILTERS the intense glaring sunlight, letting in 94% of the light, but rejecting *all* of the tiring glare and 15° of the heat (actual thermometer tests).

Goes on OUTSIDE of Glass—yet rain or weather conditions do not affect *SKYCO No-Glare.* Neither will it rub or flake off. Yet you can remove it easily with warm wateer and a brush. *Just as effective if applied on inside of glass.*

Surprisingly Economical

A single gallon covers from 700 to 800 square feet of glass—*No-Glare* costs less than ½c per square foot of glass coated. One application lasts throughout sun-glare season. Absolutely guaranteed.

Convenient Trial Offer

Used by textile mills everywhere. Sold by mill supply houses. Order a trial gallon today at 3.50 and try it on a "glary" window.

THE SKYBRYTE COMPANY, 1420 E. 25th St., Cleveland, Ohio

Reduces Heat 10° to 15° — Yet 94% of Light Maintained

SKYCO NoGlare

Gives a Cool Diffused Light that is Restful

who wanted to buy from someone else. I said to the gentleman as I neared the door,

"You have enjoyed yourself. Now, in fairness, let me say the thing that is on my mind at the moment, and agree to laugh with me. I cannot feed the little family back home with 'courtesy calls'. You so wrap yourself with indifference and subservience to subordinates, that you give no consideration to men, nor the goods they are selling, and the people who jeopardize their money by allowing you to play with this mill have never realized that a man in your position would wilfully shut his eyes to progress or betterment and give no consideration to merit or competitive values, and let me hazard the statement that if you pursue your present policy of calling in a subordinate who can influence you against your better judgment, as was so forcibly shown in this case, it will be only a short time until you will drift into the herd of unnumbered millions who have passed on."

Another case—

"Oh, yes—ah—my contract comes up in June. Drop around about that time. I'm awfully busy this morning. Nice day, etc., etc."

I call again at the proper time, chalking up my expense in the trusty expense book, and get—

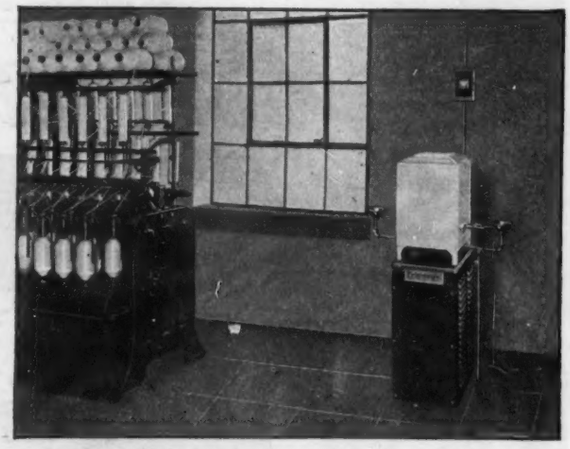
"Why—ah, I find that I am protected until next year."

That's all right. We take it as part of the game, but what is the effect when the old expense gets back to the house? It has to be passed back to the consumers, one way or another; high prices or reduced values.

Now, for a more pleasant incident. I called on a gentleman who was brutally frank, but courteous, and he stated, so anyone could understand it, that he was prejudiced against my house and he had his source of supply, which was satisfactory, but that if I could break down his resistance, he would go into it in as open-minded a way as possible. The result was, he saved six hundred dollars on an installation job, and has been getting the efficient service which I guaranteed. This man had the courage to come out in the open and put himself in position to take advantage, if any, of new ideas and methods, and, allow me to say, with all respect, that many an interview is refused because of the lack of courage to step out and expose one's ego to the assault of well-trained minds, specializing on probably one thing.

Tons and tons of literature have been mailed, solely with the intent of getting ideas over without the cost of traveling salesmen, but it is known by no man, what, when, or if, the buying public reads. A test case of two hundred personal letters, with the clearest possible appeal to the public to investigate the merit or efficiency of a certain article was sent out, and not a single inquiry came out of it. So on we go, the buyer and the seller, playing tag, so to speak, while the manufacturers, on one hand, and the stock-holders of industrial plants on the other, adjust their business to fit, one by adding sales cost and taking it back wherever they can, and the other by lessened dividends or profits by lowered qualities in some instances, and by inefficient operation coming from improper purchases.

ANOTHER SALESMAN.



Frigidaire Water Coolers, like those at the Poinsett Mills, Greenville, S. C., are saving money and helping to increase the health and output of workers in factories everywhere.

$1380
saved annually by
Frigidaire Water Coolers
for the Poinsett Mills

MR. L. F. KELLY, Superintendent of the Poinsett Mills, Greenville, S. C., says, "we are greatly pleased with our Frigidaire equipment. We installed five Frigidaire coolers about a year ago. They have not only given satisfactory service ever since, but saved us about $115 a month on our water cooling bill."

In addition to savings there is the still more important matter of the health and efficiency of workers which is vitally affected by drinking water. A plentiful supply, cooled to exactly the right temperature keeps men and women better satisfied, more efficient, more productive.

Frigidaire leads in dependable, economical, large-capacity service, and has a remarkable record for long life. Get all the facts about Frigidaire Water Coolers designed for factory installation. Learn about their low cost and convenient General Motors terms to industrial operators. Write a card or memo today.

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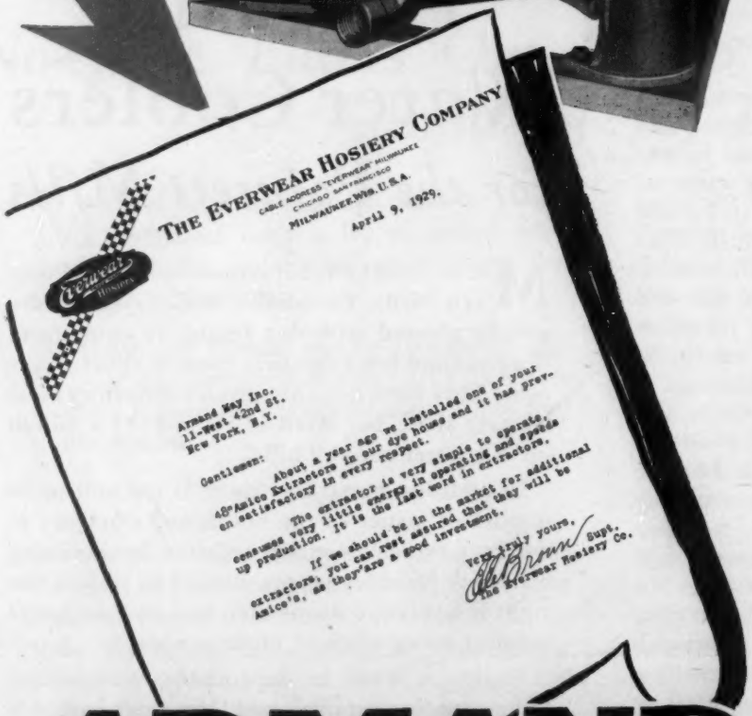
Ask any user!

AMICO

The Original Underslung Extractor

32"-40"-48"
60"-72" dia.
Motor or
Belt Driven



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CABLE ADDRESS "EVERWEAR" MILWAUKEE
CHICAGO SAN FRANCISCO
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April 9, 1929.

Armand May Inc.
11 West 42nd St.
New York, N.Y.

Gentlemen:

About a year ago we installed one of your 48" Amico Extractors in our dye house and it has proven satisfactory in every respect.

The extractor is very simple to operate, consumes very little energy in operating and speeds up production. It is the last word in extractors.

If we should be in the market for additional extractors, you can rest assured that they will be Amico's, as they are a good investment.

Very truly yours,
The Everwear Hosiery Co.
Supt.

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Argus Knitting Mills	Lebanon, Pa.
Atlanta Hosiery Mills,	Atlanta, Ga.
Cooper Wells Co.	St. Joseph, Mich.
Everwear Hosiery Co.	Milwaukee, Wis.
E.M.H. Hosiery Mills,	Burlington, N. C.
Mercantile Dye Works	New York
National Knitting Mills,	Milwaukee, Wis.
Pilot Hosiery Mills	Lexington, N. C.
Princeton Rayons, Inc.,	New York, N. Y.
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NEW YORK
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Amico Extractors Are Used Throughout The World

Methods of Drawing-In Fancies.

EDITOR COTTON:

In a recent issue, "CONTRIBUTOR NO. 4151" submitted a problem as to drawing-in. He asked about the "one-girl" method, on gingham, suiting, and handkerchief patterns—that is, not using a hand-in girl. He wanted to know the best practice as to using one or two hooks; whether to use a lease or a comb to draw from; if the girl should begin on the left or right side of the harness to draw in; and whether card clothing should be used to hold the ends down.

Your contributor has about described the system that we use here in drawing-in. We do quite a bit of dobby work and some two-beam work, and it is all done on the "one-girl" method.

If a man is using colored work, he can help quite a bit by putting in lease strings between the various sheets of color on the slasher before the loom beam is taken off. The first operation after the beams are put into the rack is to brush the ends down into a sheet of card clothing, and from this sheet the ends, so brushed down, are drawn through the drop wires first according to the pattern described. Then after the drop wires have been completed, the harness are hung in front for drawing.

We find that the girls will use two, three or four hooks to draw-in with, according to what seems to them to best suit the draw they are making. If they use two banks of drop wires they use two prong hooks and three and four for three and four banks of drop wires. Naturally, the number of harness drawn will determine the number of hooks that the girl will use.

In starting to draw-in the girl begins at her right as she sits in front of the drawing-in rack. Of course she will have to read the drawing-in draft backwards, that is, begin at the right hand side of the paper and read from right to left. It will also be necessary for the slasher man to pick from that side of the beam which will be at the drawing-in girl's right when she starts. In other words, he must begin to pick from the left-hand side of the slasher as he stands in front of the loom beam on the slasher.

CONTRIBUTOR NO. 4152.

EDITOR COTTON:

Replying to the questions of "CONTRIBUTOR NO. 4151," concerning our practice in drawing-in complicated warps for fancy work.

All of our girls use a double drawing-in hook, that is, two hooks in one handle. Experience has shown us that with practice with the double hook, a girl can draw two threads just as quickly as one. Therefore, she can draw the drop wires and harness in just one-half the time it would take should she use a single hook.

In drawing our warps, we use both a lease rod and a comb. We lease the color at the slasher and place the comb at the drawing-in frame. The draw-in girl draws directly from the comb. This method, we find, is best, for it is the best way to keep the ends from becoming crossed.

All of our girls draw from right to left. This is the most natural way for a right-handed person to

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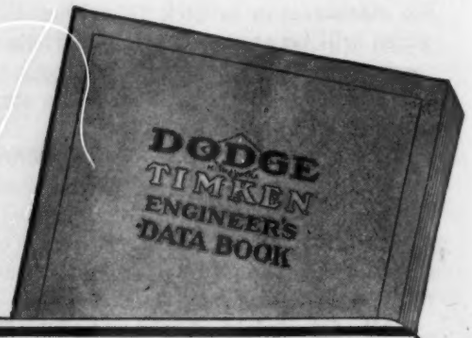

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draw a warp. The thread is drawn through the eyes with the right hand, and the loose end is pulled to the girl's right and allowed to fall out of the way. Her left hand is not encumbered by the loose ends hanging from the harness eyes. Of course, in the case of a left-handed person, the reverse would be true.

We use card clothing to hold the ends down. I do not know of a simpler or better method.

I think your reader will find the "one-girl" system very satisfactory, for I feel an extra girl on an ordinary warp would be superfluous.

CONTRIBUTOR NO. 4153.

EDITOR COTTON:

In connection with your discussion on drawing-in practice, I will say that I have tried both methods of drawing-in—that is, with and without the hand-in girl, and I think the "one-girl" method is by far the best as regards both production and cost. In fact, I have changed from two to one girl since I have been operating this mill and find that I get along much better.

Our girls use only one hook. We pattern our warp on the slasher and find no necessity for leasing. We only use the comb. The girls start from the right-hand side of the harness. We use card clothing to hold the ends tight, and I do not know of a better method than this.

CONTRIBUTOR NO. 4154.

EDITOR COTTON:

I have never used more than one girl to the drawing-in frame—two warps—and she uses two hooks on one handle. We have always used a comb to spread the warp for accurate drawing. Our girls begin on the right side of the harness to draw the warp.

We use card clothing to hold the ends down and facilitate the work as well as assist in accuracy.

This, I think, is a perfectly reasonable method of drawing-in warps, and in my opinion is the cheapest method compatible with speed and accuracy. I am giving this information in response to your "Contributor No. 4151," who wanted some discussion on these points. I have used this method invariably for all patterns involving extra warps, towels, ginghams, suitings, handkerchiefs, etc.

CONTRIBUTOR NO. 4155.

EDITOR COTTON:

In operating on the "one-girl" method of drawing-in warps on two beam work, it is my opinion that one hook should be used, and that both the lease and comb should be used to draw from, the girl starting from the right-hand side of the harness. I also advocate the use of card clothing to hold the ends down. I know this is the method that is used in two of the largest and best known fancy goods mills in the South.

CONTRIBUTOR NO. 4156.

Sprocket Stock of Link Belt Company.

Link Belt Company, 910 South Michigan Avenue, Chicaco, Ill., has recently issued a 38-page booklet showing detailed specifications of the 15,000 sprocket wheels carried in stock by the company. This stock is made from over 1300 separate patterns, which need only to be bored and key seated, allowing shipments to be made promptly.

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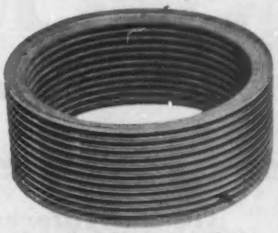

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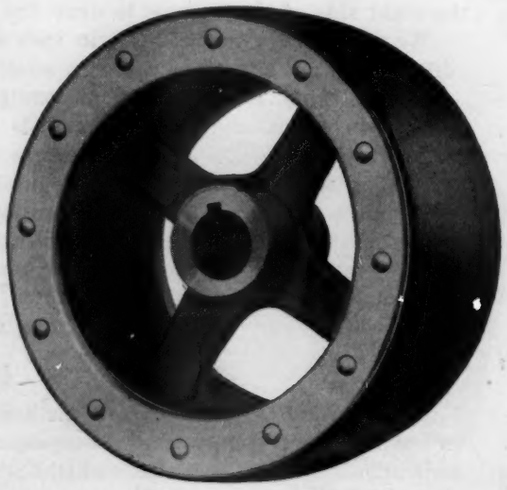

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New Loom without Shuttles.

INFORMATION has been released in Manchester, England, regarding the invention of a new loom, from which the shuttle has been entirely eliminated. Instead of the shuttle flying across the warp from box to box, the filling will bridge the warp by two expanding pointers; one will stretch across half-way with the filling, and will be met by one from the other side, which completes the transit.

Continuous operation of the loom is assured, it is stated, with a supply of filling crossing the warp in any sequence desired. It is claimed that the invention will result in more efficient and better production of wool and cotton goods, and that it will not be necessary to stop a loom in order to change the color of the filling, and bad patches or thin places in the fabric can be avoided, as the filling can only once cross the warp without detection of the fault.

Commenting on this Yorkshire invention in the *"Daily Express,"* a well known textile engineer says "It is generally agreed that the new invention makes a really valuable contribution to the complex problem of efficient and abundant weft supply. It provides for a multiple supply of weft, and, what is of real importance, the supply can be regulated in practically any order of sequence.

"The somewhat extravagant claims which have been made in late years regarding new looms or attachments have led manufacturers to regard new inventions with circumspection, but this new Yorkshire-born development marks a genuine advance."

Another Lay-Out for 30s and 43s.

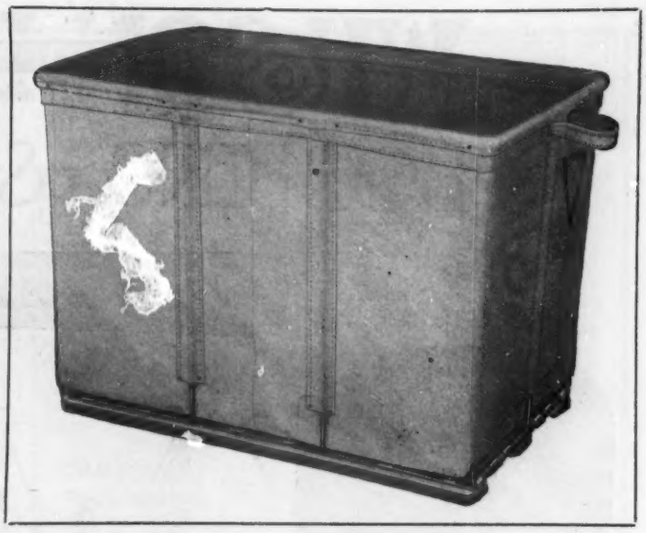
EDITOR COTTON:

In a recent issue "CONTRIBUTOR NO. 4157" asked some of us to give suggestions as to the proper drafts and twists to use in making 30s warp and 43s filling. He gave his lay-out in detail and it happens that I have had almost an identical lay-out, and I am glad to tell him and other readers what we do for quality and strength on these yarns.

In the opening room we put ten bales of cotton down for a mixing, and use, as far as possible, the same amount from each. Of course at times they vary from different causes, but as a whole we feed an average from each bale into the opening machines which is carried to the picker room by a suction pipe about 300 feet from the mill. It then goes through two horizontal openers, onto the automatic distributor and into the hoppers. We use only two processes of picking.

I am sure everyone understands that it is necessary to have the machines thoroughly oiled and kept clean. The evener motions must work properly so that the cotton is spread on the screens as evenly as possible. We allow one-half pound variation each way on the laps for the cards. We make a 10 1-2-ounce lap, on 40-inch machines.

We draft 102.3 on the cards, and make a 45-grain sliver. We strip the cards three times a day with a vacuum stripper. All piecings at the pickers and cards are made as nearly perfect as possible, as well as all other piecings throughout the mill. We grind the



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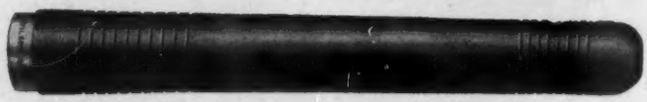

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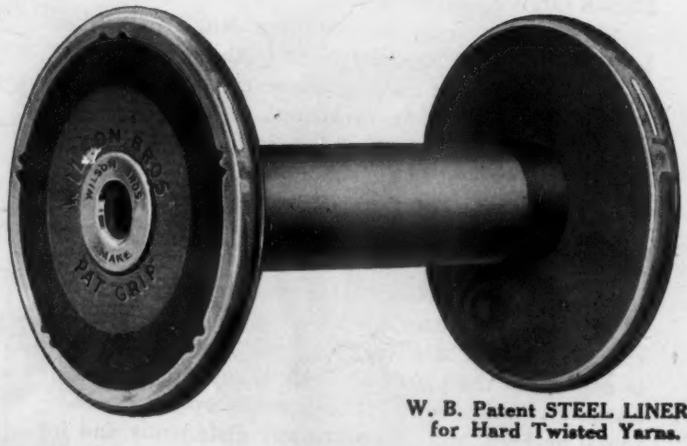

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cards about every 30 days. At every grinding the grinders clean all oil holes when starting to grind, and oil with a non-fluid oil which does not fly and dampen the clothing, causing "oil rots" on the clothing. They see that the oil flows through every oil hole while grinding. When done they gauge up all over, and set to the usual gauges generally understood by all carders, according to the weight of the sliver. But since we are talking about a 45-grain sliver, I will give our settings: Feed plate to licker-in, 10; licker-in to cylinder, 10; mote knives to licker-in top knife, 17, bottom knife, 12, and at a 17 degree angle, which we have found to get the best motes. The flats at the back stands of the cards are set to a 12, and we draw down at each stand as we go over to the front stand, which we set to a 10. Some differ as to this method of setting, but we take the stand that as the cotton goes onto the cylinder it is more bulky, and is coarser than it is when it has reached the doffer. The front plates are set according to the amount of strips desired. The doffer is set to a 7, or an easy 5, where it will slide along between the doffer and cylinder just a bit "sticky."

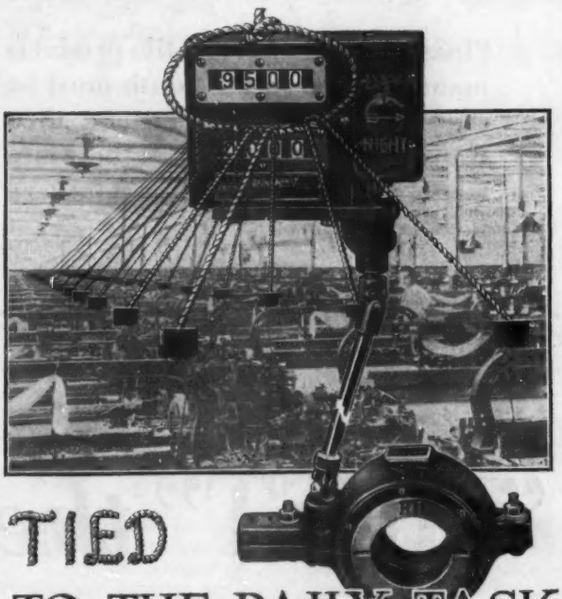
I failed to give the settings on the picker. The Buckley beater points are set to the delivery point of the cotton feed rolls to about 3-16-inch; the blade beaters to about 1-4-inch; and the Kirschner beaters on finishers 1-8-inch at the point of contact.

Getting back to the card, care must be taken in setting the doffer comb blade so as not to let it drag the sliver or draw too much tension on the sliver as it is being combed from the doffer. There has never been very much said about the tension from the doffer to the coiler head calendar rolls, but we have found that there is almost as much danger there in stretching the slivers as at the drawing frames. Card cans should not be allowed to run too full, as this will cause a lot of tension on the slivers and disarrange them, and this makes uneven places in the sliver. Unevenness means thin places, and yarn is no stronger than its weakest link—so there you are.

Taking up next the drawing frames, many people differ with us, but we found that by running seven ends up at the back of both breaker and finisher drawing, instead of six, we get about four per cent better breaking strength. We use a 45-grain sliver, with seven ends up, and use a draft of 5.83, getting a breaker drawing sliver of 54 grains. Seven of these up at the finisher, with a draft of 6.50, gives a finisher drawing sliver 58 grains per yard.

These drafts and weights may not figure out absolutely, but they are as nearly correct as we can determine them on the scales, and I do not want to be called down on how the thing figures. You can weigh one time, and figure that, and weigh again and figure that, and be theoretically off one way one time and the other way next time, so these figures are taken from an average over a long time.

Our drawing frame front roll speed is round 290 r.p.m. We clean our rollers, top and bottom, every two weeks; that is, the breakers this week and the finishers next week. Oiling, of course, is carefully looked after; and other cleaning as well. There is a lot of chance of



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getting clearer waste mixed in with the slivers at the drawing. On the back of each frame we have a little strip nailed down on the floor in order to keep the cans from getting under the sliver spoons and under other parts of the top of the frames with any chance of collecting sliver; in other words, the cans are at no time under any part of the drawing frame tops. They are set back from under the frame.

Careful piecing must be maintained on the drawing frames. Our drawing rolls are metallic, and the rolls are set up as close as they will go. By the way, we are now working in spiral tooth gearing in the train of gears in the calenders and coiler drives, and find we get no back-lash, with easier, smoother running and tensions, all of which makes for evenness.

On the slubbers, we use a 58-grain sliver, draft of 4.68, making a 0.67 hank-roving, with 1.19 turns of twist per inch. We run our frames at as low speeds as possible to get the production for the next machine.

On the intermediates, we use this 0.67-hank roving, and draft 5.75, getting a 1.94-hank roving, 1.80 turns of twist per inch.

On the warp roving frames, using the 1.94-hank roving, we have a draft of 6.15, and make a 5.70-hank roving, 3.10 turns of twist per inch.

On the filling roving frames, using a 1.94-hank roving, we have a draft of 7.10, and make a 7.00-hank roving, 3.75 turns of twist per inch.

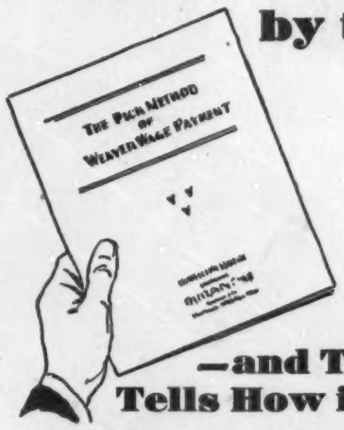
On the warp spinning frames, we use double roving, using a 5.70-hank roving, with a draft of 10.80, making 30.50s yarn. Our spindle speed is 9,800 r. p. m., our front roll speed is 112 r.p.m., and we use a 6/0 traveler on a 1⅝-inch ring.

On the filling frames we use the 7.00-hank roving, double in creel, with a draft of 12.80, making 43s filling. The spindle speed is 8,590, the front roll speed is 96 r.p.m., using a 14/0 traveler.

We have a system of overhauling by which we get over our spinning frames once a year, examining and looking over the top rollers on all frames once a month. Our breaking strength is along with the average on 30s warp, and we sometimes think we have a better yarn than most of the mills on our numbers. Our weaving seems to bear us out on this; our customers having little complaint to make on breaking strength.

One thing which has helped us to get stronger yarns in the spinning room is to keep the diameter of the spinning bands larger than the worn grooves in the spindle whirls; then waxing the new bands as we tie them on. We take the beeswax and melt it into small cakes to fit a bander's hand, so it is convenient for him to carry it. Tying the right kind of bander's knot plays a great part in the life of a band. We formerly prepared our bands by unraveling the ends so as to have them ready for a splicing lap or knot, but this takes the twist out of the bands. We didn't get onto this until one day we found ourselves out of beeswax, and the bands tied on without waxing did not stay on long, so we changed the method of preparing the ends of the band. In fact, we did nothing at all to them, tying a different knot—a sort of a double loop flat knot—which gives no trouble about staying tied. We make our bands from roving. Another thing we

Many Mills are Paying Weavers by the Pick



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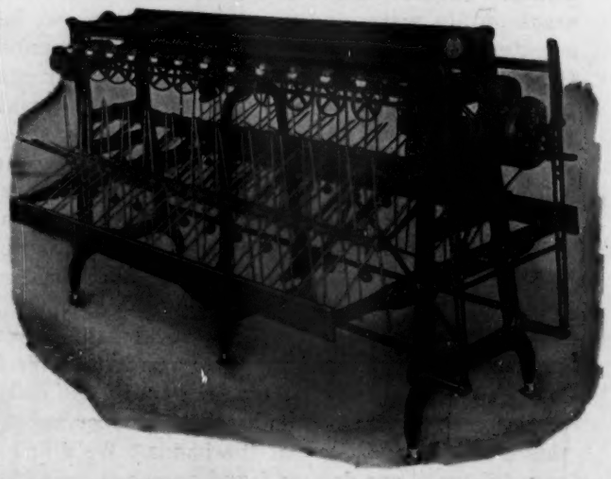

Also warpers and other special textile machines.

THE SIPP MACHINE COMPANY
PATERSON, N. J.

REPRESENTATIVES

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Gibbons G. Slaughter,
Charlotte, N. C.

Great Britain and Europe,
Textile Accessories, Ltd.,
Manchester, England

have found which helps in the life of the band is for the band boys to keep a bunch around their necks in going about their work. In this way the bands become adjusted to the humidity of the room. The wax is to the bands what the wax is to the shoe-maker's threads in repairing shoes.

There are so many things which go to making up good yarns that we ordinarily do not consider very important, but of late years so many of the old rough points have been worked out.

I hope what I have given will be of interest and help to your inquirer as well as to other readers who may be on these same numbers. I would welcome any practical criticism of my lay-out and any suggestions.

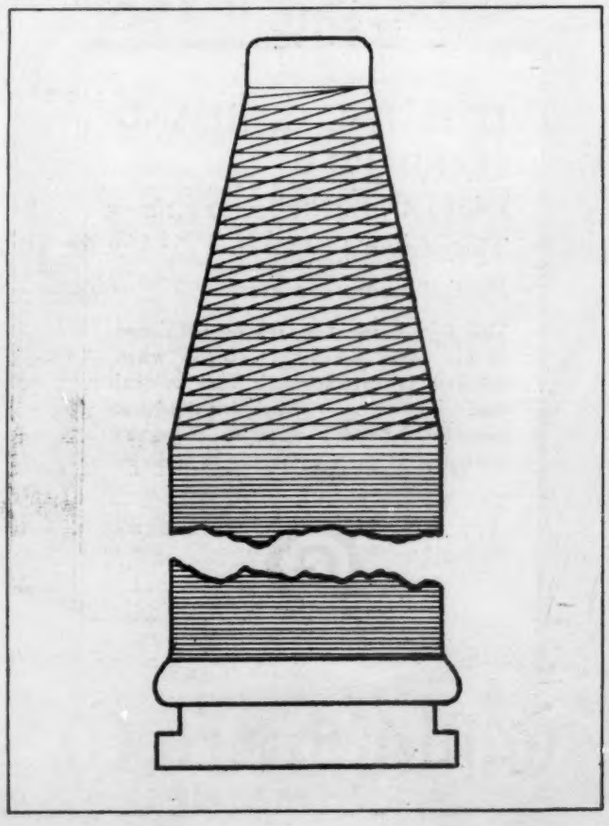
T. A. D. (GA.)

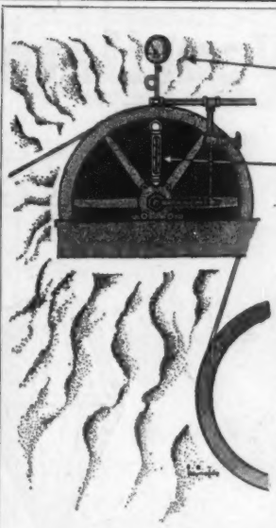
Preventing Sloughed-off Filling.

EDITOR COTTON:

I notice in a recent issue of COTTON quite a bit of discussion about filling sloughing off in weaving or winding. It has been my experience during the past forty years that it is best to have the traverse on the spinning or winding to operate as much as possible like mule spinning. On mule spinning machines the faller wire goes down with a moderate speed and comes up fast; the up stroke makes a binder for the down stroke wound yarn. Do not try to wind the yarn as close as it would be wound on warp wind as it has a tendency to pull off in the weaving or winding.

Use as heavy a traveler as possible. The accompanying sketch shows the criss-cross wind on the nose of a bobbin of yarn, if wound on in this way with as heavy a traveler as possible the yarn will not pull off in weaving or winding, at least I find it so. Every





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Only a
THERMOMETER
can indicate drying
cylinder temperature
ACCURATELY.

IN sizing rayon warps the temperature of drying cylinders is very important. If insufficient, warps will not dry thoroughly; if excessive, ends will bake, resulting, in either case, in lost production and impaired quality.

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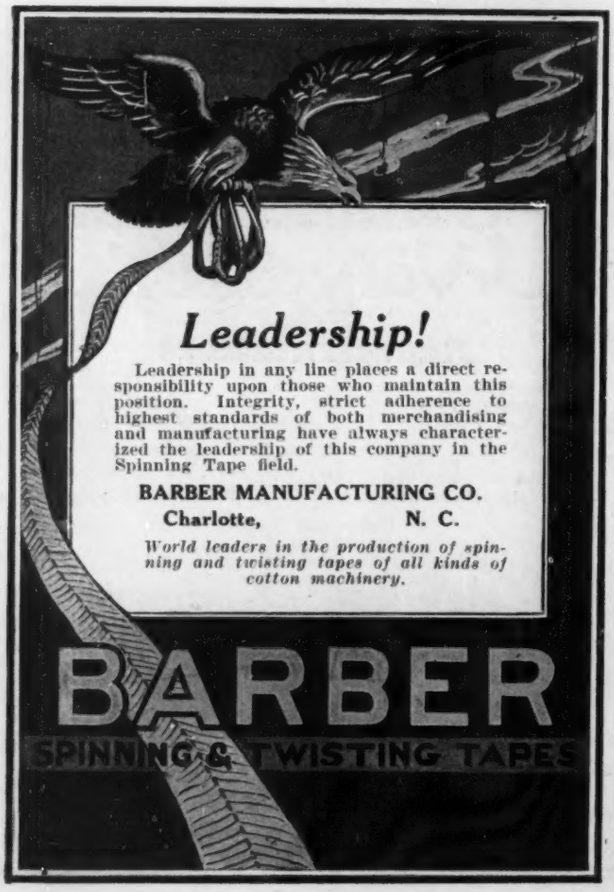
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SACO, MAINE

spinner's hobby is to run a light traveler in spinning to avoid ends coming down, but all filling can be wound tight if the proper traveler is used and the traverse regulated to suit the yarn being spun.

If it is necessary to alter the shape of the cam to get the proper speed of the traverse, experiment with one frame until all the troubles have been overcome. It is bad policy to jump in and change all the frames, or make a radical change of any kind, until you are sure that you have a remedy for your troubles.

CONTRIBUTOR No. 4580.

Preventing Tangles on Combination Wind.

EDITOR COTTON:

I am writing to reply to "R. P. B. (S. C.)" with reference to the combination wind in spinning. He said in a recent issue that he is using this—that is, a filling attachment and warp cam to give about a 4 1-2-inch stroke—and that his spinners like it, but that he has difficulty with the frame tangling at the top change.

We use the combination wind with a warp cam and filling let-off with a 4½-inch stroke, and the way we have overcome tangling of the yarn is by allowing a little more taper at the top than at the bottom; allowing no lost motion at the top, and by going over all the traverses to see that there is no dwelling at the top. I hope this will be of interest in connection with this question.

S. G. (GA.)

EDITOR COTTON:

In a recent issue you published an inquiry from "R. P. B. (S. C.)" with reference to combination wind in spinning. That refers to the use of a warp cam and filling attachment to give a 4½-inch stroke. This man complains that while this runs better than the regular warp wind, he has difficulty with the frame tangling at the top change.

I have never tried this particular thing, so that I am unable to speak from experience. However, your correspondent undoubtedly has too much dwell at the top of his stroke. He might increase the speed of his rail and take up less at each pick, or more likely, he might use what is known as a composite cam with a long stroke instead of a warp cam to make a different length of stroke each time.

My impression is that the heel of his warp cam or his Pitman roll, or both, are in bad shape, and allow too much dwell in winding at the same place at the top of the stroke. This will cause the difficulty he mentions on any kind of wind.

CONTRIBUTOR No. 4150.

French Merges with Blaw-Knox.

Blaw-Knox Company, Pittsburgh, Pa., announces the merger of A. W. French & Company of Chicago with their organization. The French Company are manufacturers of Ord concrete and asphalt road finishing machinery, Nu-Methods Finish Grader, New Ball Wagon Grader, etc. The personnel and policies of the French organization will continue as heretofore and the company will operate as a separate division of Blaw-Knox Company.

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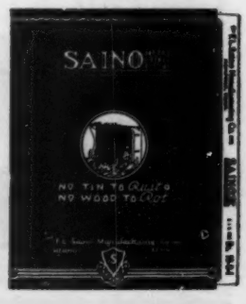

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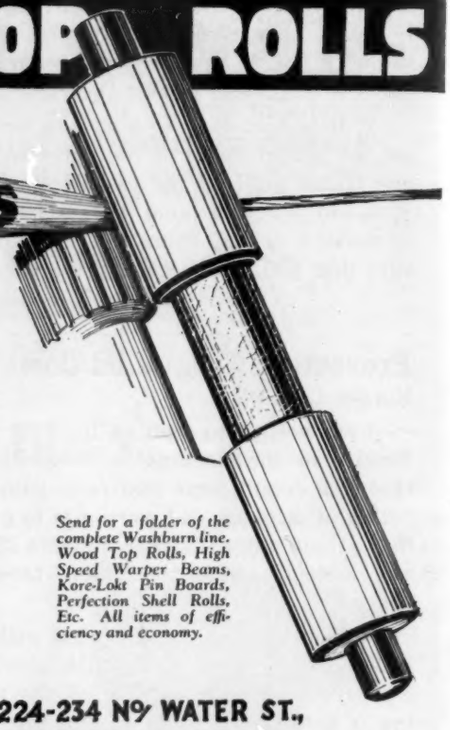
WASHBURN WOOD TOP ROLLS

NO COCKLED YARNS



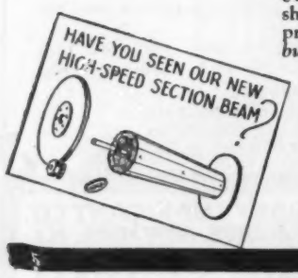
One way to get better and more uniform yarns of higher tensile strength off your spinning frames is to use *Washburn Wood Top Rolls*. Furthermore, you will be able to materially increase draft within the limits imposed by considerations of quality.

This is not a theory or buncombe, but an established fact, proven and re-proven by unbiased tests made in innumerable mills on all count yarns, standard or long draft.

The following concise description will explain why. *Washburn Wood Top Rolls* are "loose middle top rolls". They require no weighting. The sheepskin covering over felt and wood maintains a delicate tension and has more resiliency, thus producing a more even yarn of greater strength with less "ends down". The steel shafts fit into standard cap bars and saddles and take wear surprisingly well. And here is another interesting feature. *Washburn Wood Top Rolls* need no resetting when changing the staple of cotton or numbers.

Shall we send you a group of test cards showing actual details of results in other mills, or would you rather have our engineer call?

Send for a folder of the complete Washburn line. Wood Top Rolls, High Speed Warper Beams, Kore-Lokt Pin Boards, Perfection Shell Rolls, Etc. All items of efficiency and economy.



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The aim of the Gastonia Brush Company is to make *better* brushes. How well they have succeeded is amply evidenced in the steady increase in the use of their brushes in the leading textile mills throughout the South. Gastonia Brushes are a *paying investment* to any textile mill—they're winning approval on performance.

Information or prices sent gladly on request.

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and also do
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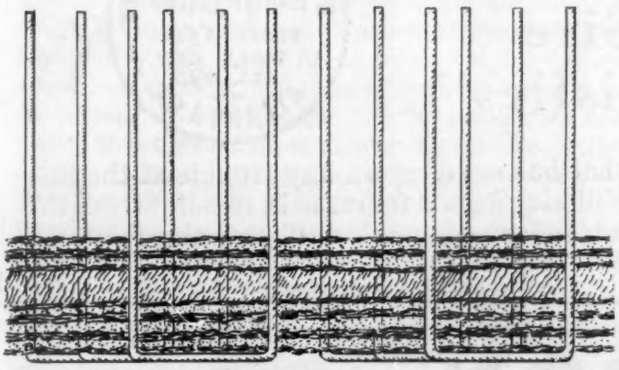
Wissco Non-Strip Card Clothing.

There has been considerable discussion in the various textile meetings, and among mill men, recently with reference to the application on cards of clothing which is designed to eliminate stripping. Quite a number of installations have been made in various mills, and the new development is attracting a great deal of interest.

It is felt, therefore, that the accompanying sketch, showing the construction of the Wissco non-strip card clothing, as made by the Wickwire Spencer Steel Company, 41 East 42nd Street, New York City, will be of interest. This material has teeth of wire, formed into staples and entered at a suitable angle into a proper foundation. These teeth are extended radially at 90 degrees from the main cylinder surface of the card. The number of teeth is arranged to suit the individual user, as in the case with regular clothing, such as in counts of 80s, 90s, 100s, 110s and 120s. The manufacturers of the material point out that, in

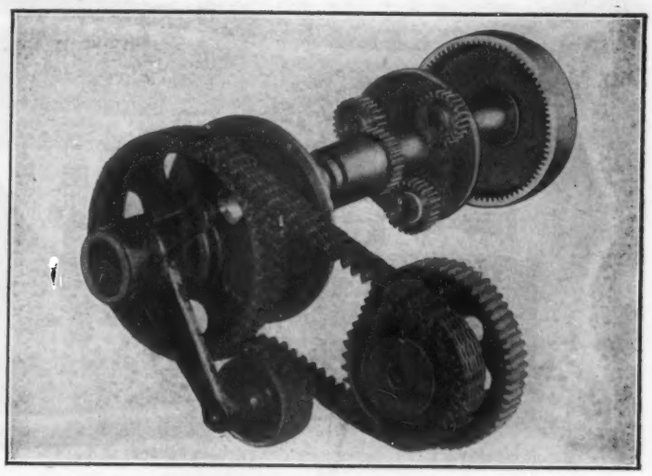


their experience, the outstanding advantage of this type of clothing is the reduction in stripping, which, obviously, gets away from the "light" and "heavy" sliver resulting before and after stripping in the usual way. The company further states that there is a further savings made in that more good fibers, ordinarily removed in stripping, find their way over to the can at the front of the card. Depending entirely upon the grade of cotton, condition of the lap, amount of production, etc., the company states that from ¾ to 2 per cent of cotton is saved in this way.

It is also stated that this type of wire is applicable to the doffer as well, and the manufacturers claim that the type of wire used resists "hooking," that less grinding is required, and that the grinding operation may be carried out with more pressure on the grinding roll, hastening the grinding operation.

Three New Catalogs of U. S. Electric Tool Company.

The United States Electrical Tool Company, Cincinnati, Ohio, have made several additions to their line, and have recently issued three catalogs. One of these books, No. 25, is devoted to more than fifty portable electric drills, screw drivers, valve re-facers, grinders and similar items. The No. 26 catalog marks the initial appearance of the new U. S. flexible disc sander and improved portable surface grinders, etc. In the new No. 27 catalog which is devoted to heavy duty grinders, buffers and polishers, the company's new 20-inch and 30-inch high speed snagger is shown, as well as many other items. These catalogs may be secured upon application to the company.



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Give the Stewart Compound a chance to prove its economy in your mill, as it has done in scores of others. We will be glad to ship you one and allow you to use it for six months. At the end of that time an invoice will be rendered. If you are not pleased, just ship the Compound back and the charge will be automatically cancelled. Write today.

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STEWART COMPOUND
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Dyeing Raw Stock Cotton.

(*Continued from Page* 882.)

properly. It is surprising how careless a great many dyers are about this very matter of dissolving, and yet they know that it is the most vital part of the dyeing operation. A dye well dissolved is half dyed, but a lot of it gets dumped into a tank with the necessary chemicals, a few gallons of water, a couple of shots of steam and a couple of spanks with a paddle and departs on its way with the dyer's blessing and very little attention besides. Later, if anything goes wrong it will receive insulting remarks from the same source, for the dye is always presumed guilty until proven innocent.

After the cotton has been properly boiled out and the dye liquor circulated the required time and at the proper temperature, the liquor must be either dumped or pumped up into a storage tank. Then follows the very important operation of washing. There is no effort being made in this article to go into specific details, so that it is not possible to say how long the washing should continue, except that it should be well done. The time varies with the different colors, the freedom of circulation obtained, and to some extent the quality of the water. If continued too long it wastes time and water, if not well done it affects the running of the works. In general, after the wash it is a good idea to close the valves, start the circulation going again and then heat the water up to about blood heat and put in a little salt. After this salt dissolves in the water and circulates for a while, the water should be drained off without further washing. This leaves a small amount of salt on the fiber which helps the spinning qualities after it gets into the mill.

In unloading the machine the false bottom is generally lifted out with the cotton and then dumped and replaced in the machine for another load. The weight of this bottom is considerable, it makes the load much heavier and harder to handle and it must be turned upside down to be dumped. All this makes a hard job and takes some time. It is better to have several light frames made of heavy strap iron to carry the stock. These are made square or star shaped with the iron set on edge to give its full strength to the load. Chains are attached the same as to the false bottom. A frame is placed in the machine and the cotton put in on top of it and in unloading it takes the place of the false bottom and lifts the stock out. It is not only much lighter, but does not have to be unloaded. It can be left on the floor under the cotton and another put in the machine. This saves a lot of time and work.

The extractor should whizz the cotton until no more water comes out of it. This is a simple rule but a little hard to enforce when the extractor man finds himself a little behind. The dyer often gets the blame for not dying the stock properly when the fault really lies with the extractor.

To run well in the mill, dyed cotton should not be dried until all the moisture is out of it. Just how much should be left is a matter of experience. Cotton that is too dry easily falls heir to static electricity and under the right conditions is impossible to run.

New "HURRICANE" Master Stock Dryer

for cotton, linters, wool, noils, hair, rags, etc. Many improvements in design and construction make it by far the most efficient machine yet offered. *Maximum* capacity is obtained with *minimum* consumption of steam and power.

Drying action is mild but uniformly thorough. The large volumes of warm air circulated over and through the stock, leave it lofty and light, in perfect condition for subsequent operations.

"HURRICANE" Automatic Yarn Dryers make the yarn strong, soft and elastic. For imparting moisture regain, "HURRICANE" Conditioning Machines can be operated either in conjunction with the dryer, or as separate units.

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As the cotton comes out of the extractor it is in rather a lumpy condition. To dry properly it should be broken into small lumps because if this is not done the large lumps will dry out on the edges as they go through the dryer while the middle will still be wet.

Several schemes have been tried at various times for accomplishing this result, the most common being to run the stock through some form of willow or picker which, after it has broken it into small lumps, throws it into the hopper of the dryer. This, of course, is a very satisfactory arrangement when properly put in, but for the average mill which cannot have such an installation, very much the same result can be accomplished by speeding up the spiked apron in the hopper.

It is logical to expect that when better drying or greater production is required, the thing to do is not to speed up the dryer apron, which will only take the stock through faster, nor to speed up the feed which will result in piling the stock up on the apron so that it will not dry. The thing to do is to tear it up a little finer as the small lumps will dry better than the large ones.

Breaking Up the Lumps.

To accomplish this, if the spiked apron in the hopper can be speeded up and at the same time the feed cut down to offset the increased delivery of the apron, the stock will be very thoroughly torn up before it is thrown on the dryer apron. The feed of the spiked apron is regulated by the position of the knock-back comb or roll, and the closer it is set to the apron the more it knocks back off the spikes and the less cotton gets through to the dryer apron. The most satisfactory results can be obtained by replacing the knock-back comb with a revolving drum equipped with spikes which are bent slightly backward. A spike which is straight or bent forward will catch the cotton and hold it and in time load up, but with the spikes leaning back a little this does not happen, and by running both the apron and this drum at considerable speed the cotton can be torn up so finely that the maximum drying and production of the available equipment can be attained.

All this sounds easy. Properly done, it is. Raw stock dyeing, however, handles cotton and dyes in bulk, is confined to a large extent to rather dark or dull shades, is almost always done in a place which has the appearance of being a sort of makeshift outfit and on the whole is rather dirty, sloppy sort of work. The inexperienced would naturally fall into the conclusion that the whole thing is a sort of slap-dash job that can be done almost any kind of way by almost anybody.

Such is far from being the case. Attention to details is as important here as in any other business, and quickly rewards the careful operator with level shades and good running work. On the whole it is about as difficult as any other phase of cotton mill work and as interesting.

(Suggestions of specific subjects pertaining to raw stock and other forms of dyeing will be considered by this and other contributors if the reader will submit them to the editor.)

Lubricating Cotton Mill Machinery.

(*Continued from Page* 887.)

that capable, intelligent men be chosen as oilers and a schedule set for them to follow. This schedule must be worked out for each mill as the looms should be lubricated when they have performed a certain amount of duty.

An oil having a viscosity of 500 seconds at 100 degrees F. is best adapted for lubrication of practically all bearings on looms.

An oil having a viscosity of 1250 to 1500 seconds at 100 degrees F. is best suited for lubricating cams and rocker arms. Care must be exercised in applying oil to cams as excess oil will throw from cams to cloth or warp.

It is very good practice to thoroughly clean and oil looms when the warp runs out at which time all parts are more accessible, then lubricate them between warp run-outs. Greater care in lubricating and cleaning looms will be reflected in a much lower maintenance expense.

Electric Motors.

A highly refined and filtered strictly mineral oil having a viscosity of 200 to 300 seconds at 100 degrees F. is best suited for lubrication of electric motors being fitted with sleeve type bearings, the lower viscosity oil where operating at atmospheric temperatures, the heavier oil where operating above atmospheric temperatures. Where motors are ball bearing, they are to be lubricated with a grease having a consistency of 00.

Air Compressors.

For lubrication of air cylinders of compressors a very highly refined and filtered mineral oil having a viscosity of 300 seconds at 100 degrees F. is best suited. External parts of compressors to be lubricated with the 200 seconds oil.

New Book on Rayon.

"Artificial Silk" is the title of a new book which has just been published covering rayon. The volume, which is published by D. Van Nostrand Company, Inc., Warren St., New York City, represents a translation by F. M. Rowe, professor of chemistry and dyeing at Leeds University, of the original book by Dr. Franz Reinthaler. The study takes up the properties of cellulose, and then discusses the cellulose nitrate, cuprammonium, viscose, and other processes of manufacturing rayon, and also touches, in other chapters, upon such related subjects as the examination and testing of the fibers, the dyeing of rayon, the uses, the economic situation of the industry, etc. etc.

The price of the book is $7.50 per copy, and may be secured direct from the publishers, or through COTTON's book department.

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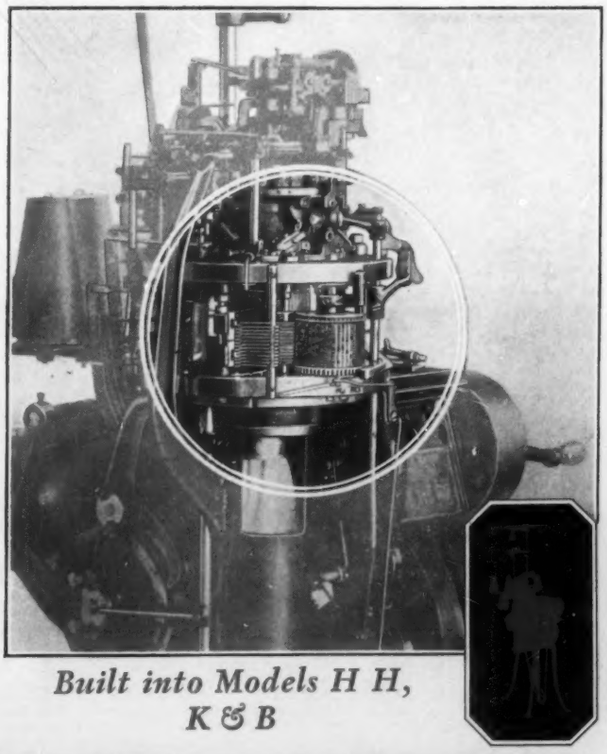

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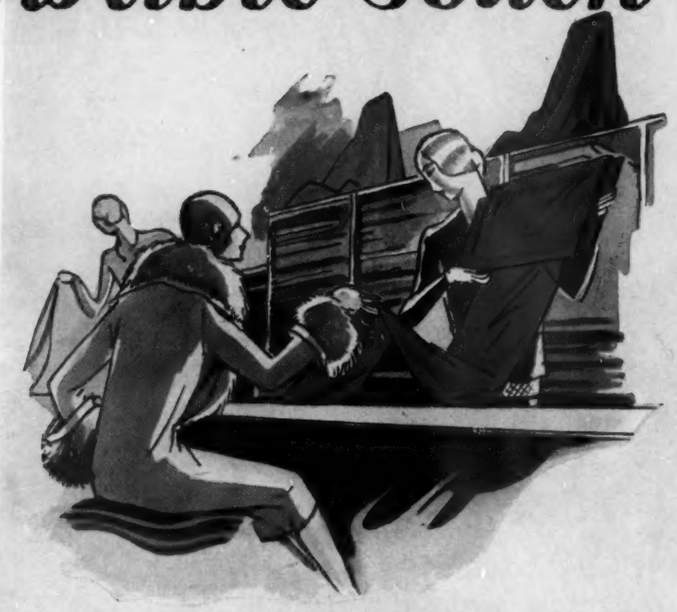
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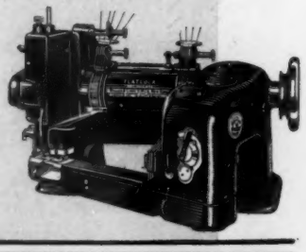

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WHAT A GOOD TOOL IS TO A WORKMAN, GENUINE W & G NEEDLES ARE TO THE MACHINE

The Seam that Circles the Globe

The *One-Bath*—the *Two-Bath* *and the Acid* Methods *of* Dyeing Silk Hosiery

By W. C. Dodson, B. E.

THIS article describes, without prejudice, the one-bath and two-bath methods of dyeing silk hosiery. After telling the main points of each, Mr. Dodson makes many good practical suggestions as to how each method should be handled, giving proven formulas, schedules, etc. His remarks are based upon a close and intimate contact with hosiery dyeing in the South. This article also describes and discusses the acid method of dyeing silk hosiery, which should interest particularly those not familiar with this manner of performing the work.

THE great increase in recent years of the manufacture of silk hosiery in the South has led to a keen realization of the importance of proper dyeing and finishing.

The average mill making seamless mercerized, rayon or cotton hose seems to experience very little difficulty in the actual knitting of silk; because, generally speaking, silk has good tensile strength, and after all it is simply another yarn to be substituted for the customary cotton yarn. Knitters and fixers face about the same general problems with it as they are accustomed to, and production reaches satisfactory figures shortly after work begins.

However, even the best knit stocking is of no commercial value until it has been dyed (or bleached) and finished, and the dyeing of silk presented problems rather different from those familiar to dyers who had been accustomed to the cotton and synthetic yarns. The few experienced men were by no means sufficient to meet the demands, and the dyestuff companies were quickly stripped of their best laboratory men, even though these men were seldom what might be termed experienced dyers.

In many cases the mills depended on their regular dyers being able to pick up the necessary information by costly experience. Today, although there is no surplus of experienced dyers, most of the mills have secured men who are turning out splendid work. The old squib about there being only one right way to do anything may be true of most things, but it hardly seems to hold good in a silk dyehouse, as there are at least three methods in use today with numerous variations of each. Wherever one or the other of these is being used, the dyer and the management seem convinced that it is the only way. These three methods may be considered as: (1) the Two Bath Method; (2) the One Bath Method, and (3) the Acid Method.

It has been my experience that these various methods find favor in the order in which they are listed, with the large majority of the mills using the two-bath method, and only a very occasional case where the acid method is used.

From all standpoints the two-bath method is the safest; especially where the dyer has had a comparatively small amount of experience, or where the dyer can not depend absolutely on his instructions being carried out by his men. So far as I know it has only one so-called bad feature, and that is that it requires from two and a half to three and a half hours to get a bath of goods through, as compared to one and a half and two hours for the one-bath method.

We will assume that the mill has modern dyeing machinery, and by that I mean good, rotary monel metal machines which have a perfectly smooth finish inside the various compartments or pockets.

To start with, the goods are weighed and sorted as to sizes. The bundles are then untied and the goods either shaken into nets or directly into the pockets of the machine.

The Two-Bath Method

When a full load is thus prepared, the machine is filled to the proper depth with cold (or warm water if the mill has a supply), the power is applied, and as the cylinder revolves, the degumming agents are added.

If the water supply is good, i. e., soft and clear, either of the following formulas may be used: (Percentages based on weight of goods.)

(1) 8 per cent to 12 per cent of a good neutral chip soap.

First dissolve the soap thoroughly in boiling water, being sure there are no lumps or gummy particles left. When well dissolved, pour into machine. Bring the bath to a boil and boil very gently for one hour.

(2) 6 per cent of a good white chip soap.
2 per cent silicate of soda.
2 per cent sulphonated castor oil.

Proceed by dissolving the soap and diluting the silicate and oil.

(3) 6 per cent to 8 per cent of a good sulphonated castor oil.
2 per cent to 4 per cent silicate of soda.

In this case it is only necessary to dilute the ingredients before adding to the bath, as both are already in liquid form.

Although the boil-off operation is considered by many dyers as of no especial importance, I have always felt that it deserves and requires equally as

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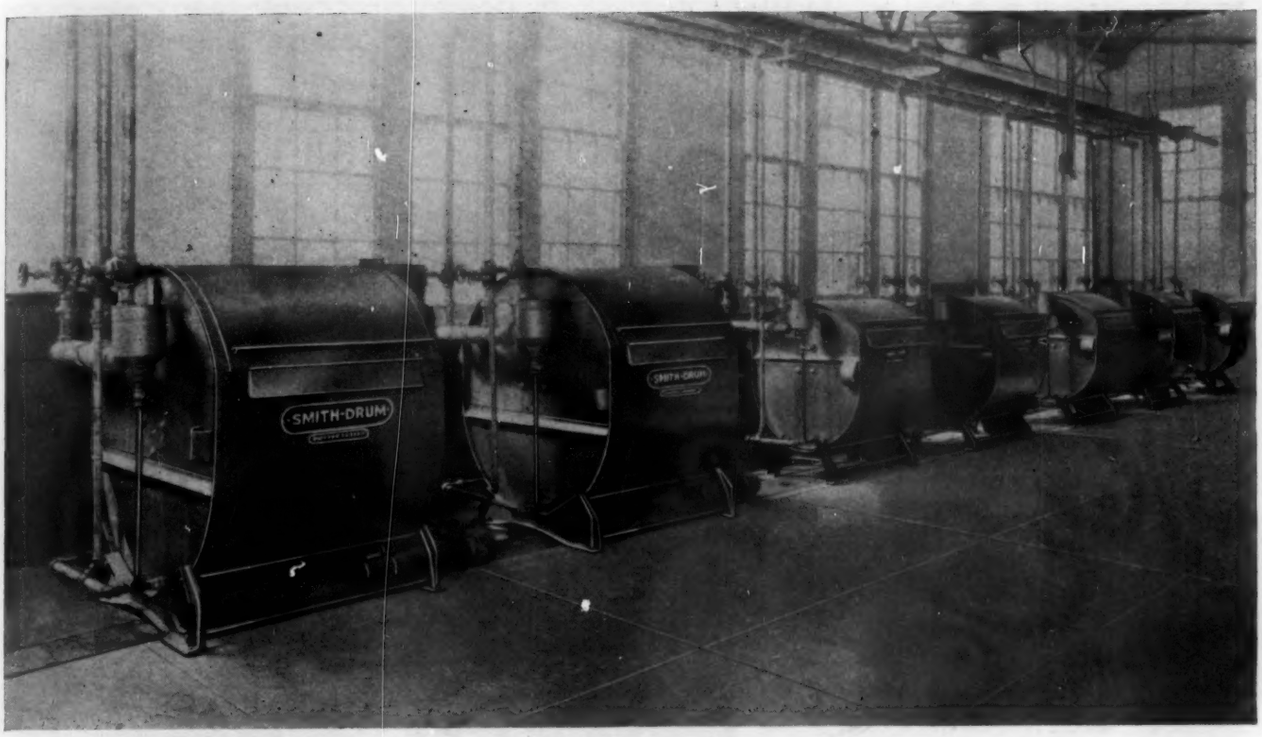

A Modernly-Equipped Hosiery Dyehouse.

much care as the actual dyeing. To give a few reasons for my views in this connection I will list what I consider some of the results of incomplete or improper boil-off.

Results of Incomplete and Improper Boil-Off.

Incomplete boil-off may show up later as spotty dyeings; I mean by that, goods which have spots, streaks, or splotches of a lighter shade than the balance of the piece. It may also result in level dyed goods containing two or more different depths of shade. This is usually termed shaded goods. Another and more common form of trouble from this same source is light shaded high spliced heels. The gum seems more difficult to remove when it is backed by the splicing yarn, and unless it is removed either during the boil-off or during the dyeing it is certain to cause this trouble.

Now as to improper boil-off; assuming that we have used a good degumming agent or agents, such as outlined, and that the bath has been kept up to temperature for an hour, it is still possible to ruin the goods by not properly finishing the operation.

If possible it is always desirable to have a small amount of water constantly entering the bath during the hour. This is to insure the bath flooding over. This flooding carries off a great deal of the loosened gum all during the run. Whether this is done or not, however, be sure to flood the bath thoroughly before rinsing.

Let the cylinder continue to revolve and open the steam and water valves. Let this go on for about ten minutes. Then drain the bath and refill machine with warm water. If no warm water is available, heat this first rinse up to 120 degrees F.—140 degrees F., and let it flood over slowly for another ten to fifteen minutes. Drain and give a second rince with water about 110 degrees F.—120 degrees F. Run this for ten to fifteen minutes also.

The goods should now be in a good clean condition, and they are then taken to the extractor and whizzed about five minutes. Take out and thoroughly shake up so as to be sure there are no tangles.

Reload into machine and fill machine to proper depth with cold water. Heat this bath to about 110 degrees F., and add one per cent to two per cent of a good sulphonated castor oil, letting the cylinder revolve for about five minutes at 110 degrees F.

Now enter the dyestuff which has been thoroughly dissolved, and if possible strained through a fine cloth. Make sure that the dye is diluted to at least four gallons with warm water—six gallons would be that much safer; and pour this solution in slowly and steadily with the cylinder revolving toward the dyer.

Let the cylinder turn in the dye liquor at 110 degrees F for five minutes, and then open the steam valves so as to bring the bath to a boil in fifteen to twenty minutes. Boil gently for thirty minutes and add slowly the amount and kind of salt recommended by the dyestuff manufacturer for each particular shade. But remember: this salt business can cause a raft of trouble if the dyer is not careful.

Run in the salt bath for fifteen minutes and sample. If your shade is off, that is another story and the dyer must then decide how best to bring it to his sample, or whether to redye it black, or whether to strip and start all over again.

So far as the method goes, it is all right for the average all silk or half silk stocking, and for the average dyehouse.

There are, of course, exceptional conditions occasi-

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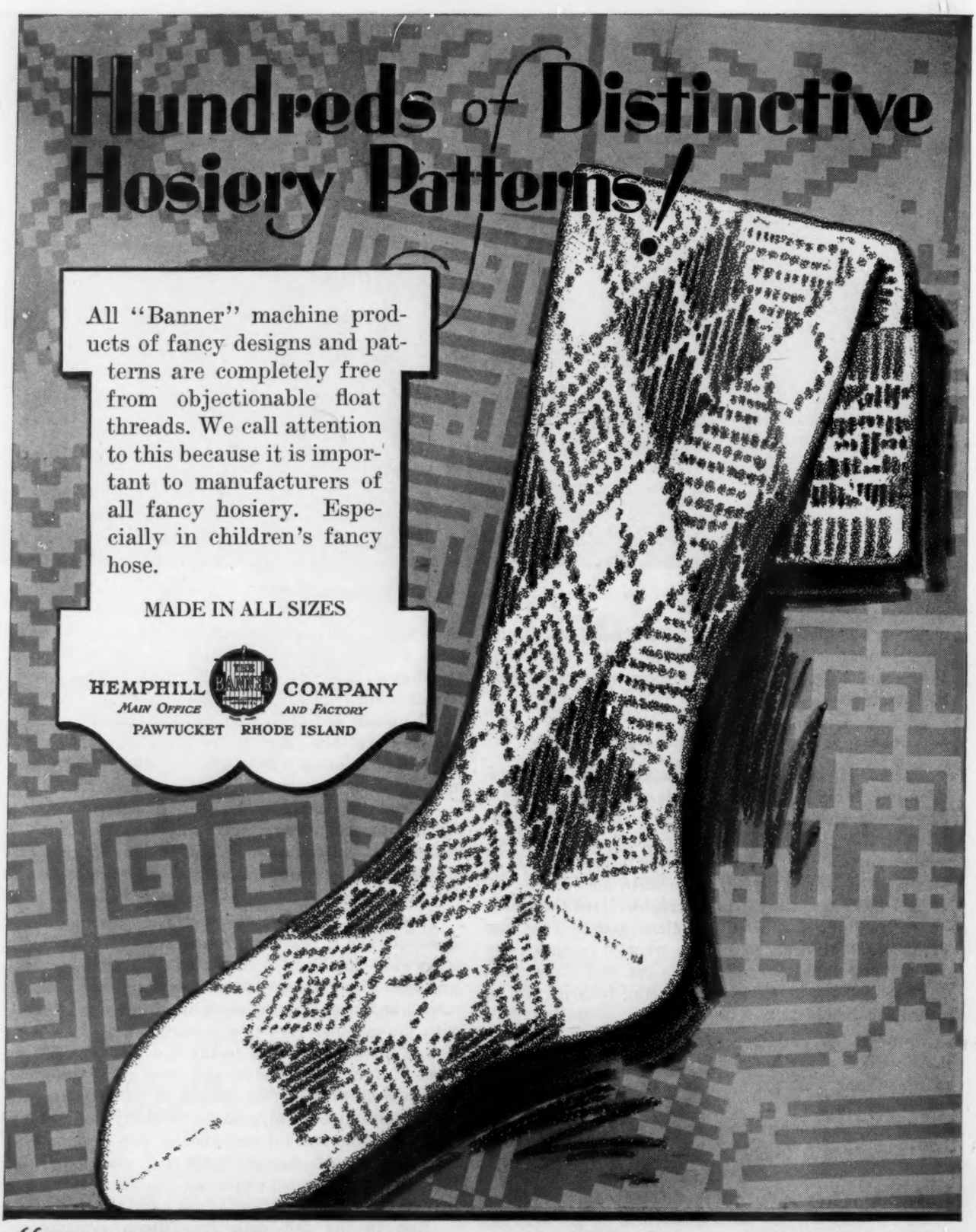

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onally, such as hard water, chemically impure water, bad silk, etc., and no general rule will fit such cases.

The Single-Bath Method

Fill the machine with water and heat to 110 degrees F. Then add ten per cent to twelve per cent of a good degumming oil This is usually a sulphonated castor oil with silicate of soda and possibly other solvents or detergents added by the manufacturers. Then add the previously dissolved dyestuff and let the machine run for a minute or two so as to thoroughly mix and distribute the color. Now load in the goods.

When all the goods are in the bath, open the steam valve and raise to a gentle boil in fifteen to twenty minutes. Maintain this temperature for thirty minutes, and sample. If the color is going on evenly, salt may then be added. Now run for fifteen minutes more and sample again.

If the dyestuff formula has been correct the goods should now be up to shade.

Assuming that they are, we then begin feeding in cold water so as to flood off all scum. Continue this for about ten minutes, then drain and refill for a warm rinse of about ten minutes, being sure to flood all during this period. This covers the general principles and practically all the details of the One-Bath Method.

As in the case of the Two-Bath Method, much will still depend on the dyer, such as determining when his goods are up to shade, etc.

Be careful with salt additions, regardless of what method is used. The matter of using salt is open to question. Some dyers so develop their formulas as to require no salt whatever, and if this can be done it is to be preferred. A great deal of good hosiery has been ruined through consequent redyeings which were largely attributable to the improper handling of salt. This may seem, to many dyers, to be faulty dyehouse practice, and I admit that in the great majority of plants, salt is used to exhaust the bath. Either common salt or Glauber salt, with the Glauber salt usually preferred.

If no salt is used, more dyestuff will be required. Also, most dyers hold the belief that salt tends to improve the fastness of the dye. As to the truth or fallacy of this belief I am not able to make a positive statement as I have never made comparative tests in order to determine this point.

If I were running a dyehouse today, I would use salt, but I would certainly impress upon my men the necessity of careful handling of this detail of the dyeing operation.

The acid method is seldom found. By most dyers and dyestuff people it is considered rather hazardous, but I have seen some extremely fine work done with it. It is quite likely that this method gives a better fastness of the silk colors than can be obtained by the other two methods. I have never seen any comparative fastness tests made, but it would seem that this method would give better results, for various reasons that aren't worth discussing at this time.

The Acid Method

First, degum the goods as in the Two-Bath Method for this method also requires two baths.

However, after rinsing once following the degumming, refill the machine with cold water, and add about 400 c. c. (per 100 lb. of goods), of concentrated acetic acid which has been diluted with two to four gallons of cold water.

Run in this bath for ten minutes, flooding all the time, and then drain. The goods should then be whizzed and shaken out before reloading into the machine. Refill machine and warm the bath to 110 degrees F. Start cylinder revolving and enter the previously dissolved and diluted dyestuff as outlined in the Two-Bath Method.

Run for ten minutes at 110 degrees F., and rais temperature to a gentle boil in fifteen to twenty minutes. Boil for forty-five minutes, and then add slowly 200 to 300 c. c. acetic acid (per 100 lb. of goods) being sure to dilute the acid with two to four gallons of water. Run twenty minutes more at a boil and sample. In this case no salt is used, although it may be used just as in either of the other two methods. Naturally, the dyes that are used must be especially selected for this method, and the formula as finally perfected for any particular shade will be different from the formulas in either of the other methods.

The matter of adding the acetic acid after the soap or degumming bath, will arouse more or less derision in the mind of the average thoughtful dyer. He will immediately decide that this data is a fine type of applesauce. So did I think until I saw the method in practice in a full-fashioned plant in Philadelphia, where it is in successful use every day.

The important point is to get all or nearly all of the soap rinsed out of the goods before adding the acid. If much soap is left it will be "curled" by the acid, and leave insoluble specks on the goods.

I am frank to say that I cannot state what is the concentration of the acetic acid used. The concentration will of course determine the quantity of acid used. I imagine it is ordinary commercial acetic of 36 per cent.

(*Continued on page* 983.)

*WHATEVER method of dyeing is used, says Mr. Dodson, much will still depend on the dyer, such as determining when his goods are up to shade, etc. Furthermore, "in none of these methods will the dyer be able to accept just any dyestuff formula as sent him from a laboratory. He will have to correct the amounts of the various colors constantly until he has what is generally called a 'standardized formula,' and even then little changes in temperature, time, water, and even in the goods, will throw his shades far enough off the sample to call for special efforts. * * * When all is said and done, it will take experience and patience, with any method, to handle the goods properly."*

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Two Machines *to the* Knitter Will *the* Plan Become General?

By R. L. P. Reifsneider

THERE are two basic reasons why the system under which one experienced full fashioned hosiery knitter operates two machines is being more generally adopted by manufacturers. The first of these reasons is, the knitter increases his earnings over what he can command when operating one machine. The other is a lower cost of production for the owner of the machines. This far the system is practicable and profitable. But it involves a problem that arises with every innovation that gets more out of the machine with the employment of fewer men. The problem is just now very much in the foreground as one that seems, in its solution, likely to have an important bearing on the near-future aspect of conditions in the full-fashioned hosiery industry.

> "THIS is the way it works: The knitter now operating two machines receives 20 per cent more in wages per week than when he managed but one. The helper, of a few months' experience, is paid a weekly wage which, added to the wage of the knitter, leaves the cost of the product of the two machines 28 per cent less than when one knitter operated each machine."

That an experienced knitter can supervise the operations of two modern knitting machines with the same measure of satisfaction to himself and his employer that could be derived from operating one a few years ago, is hardly disputable. There are, however, manufacturers who would be more content with the single unit plan continued indefinitely. They appear to be in a steadily diminishing minority. Selfish motives for supporting one view or the other are readily detected in any discussion of the subject when pushed far enough to uncover the motive. Manufacturers, even if unfriendly to the system in a general way, lean toward its adoption as an economic expedient. Few of those who have had experience with the two-machine system are known to have openly expressed dissatisfaction with it.

It has been the policy of the American Federation of Full Fashioned Hosiery Workers to antagonize the introduction of the two-machine system in mills in which its members represent a majority of the employes. Its installation has been a cause of long and bitter strikes in the last few years, notably in Philadelphia and in Kenosha, Wis. The system was the prime question before a conference of manufacturers operating unionized plants and representatives of the Federation, on April 17 in the hall of the convention of the National Association of Hosiery and Underwear Manufacturers. On that occasion Gustav Geiges, then president of the workers' Federation, expressed himself as taking a definite stand against the two-machine plan, the adoption of which, he said, would create a labor surplus in a few years, but agreeable to discussing the matter with manufacturers if they could devise means for absorbing the young men who now rank as helpers and apprentices.

That is the pivotal aspect of the problem—what are we going to do a few years hence with the young men who now are learners, the helpers and apprentices? But for the intervention of the world war, a similar question doubtless might have arisen in other industries. It probably would not have arisen in the full-fashioned hosiery industry but for the modernization of the knitting machines and the fact that operation by the single unit plan had come to be recognized as custom.

According to statistics that are not questioned, only one half as many men are required in the steel industry to produce as many tons of finished metal as in 1914, and in the automobile industry two-thirds as many men are employed to turn out as many "cars" as fifteen years ago. The steam shovel and three men remove more earth, in less time, than did a dozen or more men with pick and shovel a few years ago, and already one man and a $12 a week boy are turning off as many pairs of full-fashioned hosiery in a given number of hours as two men produced in the same plants when machines of twenty sections were a behemoth no less than the 24-section legger and 28-section footer of today.

In mills where one man and a boy helper are manning two leggers, the owners say the plan is absolutely satisfactory. This is the way it works out in a factory where the writer was permitted to compare payrolls: The knitter now operating two machines receives 20 per cent more in wages per week than when he managed but one. The helper, of a few months' experience, is paid a weekly wage which, added to the wage of the knitter, leaves the cost of the product of the two machines 28 per cent less than when one knitter operated each machine. But, some day that boy helper will be a full-fledged knitter, and will be entitled to the rate then paid to the skilled mechanic.

It is reasonable to assume that capable knitters will develop faster than the ranks are decimated by death or a drifting into other channels of employment. So, in the mind of the manufacturer holding a humanitarian interest in the boy that is making money for him today, there rankles the question, what are we going to do for him when he reaches man's estate and may be one of many in an industry overcrowded with craftsmen?

It is a logical assumption that with the two-machine system in force generally, knitters will develop faster than new jobs can open for them in their chosen trade. This became apparent to Stanton D. San-

son, president of the Ajax Hosiery Mills, in Phoenixville, Pa., soon after announcement appearing in trade publications was reproduced in the periodicals of various educational institutions, that his mill had set up a training school for knitters. Applications from boys in scattered universities for the privilege of enrolling as members of the class poured in, many offering to work for a given time without compensation and a few proposing that they pay for the instruction, besides taking no pay for their work.

Realizing that the inflow of learners was going to be greater than the demand for finished knitters, Mr. Sanson at once set about solving the problem, for himself, as to what course to pursue. "We are signing up no more boys as learners or pupils in our training school than we feel we can employ at the end of their apprenticeship," said Mr. Sanson. In many lines of industry, he pointed out, it is easily possible to increase output per machine without employing a helper or assistant for the operative. But not so in full-fashioned hosiery. Only by increasing the speed can a machine be made to produce beyond a certain limitation, but with two machines under his care, an operative may double his production, with the aid of the helper whom manufacturers now are considering as a part of their individual organizations and the industry at large.

What to Do with Surplus Knitters?

Two ways were mentioned for taking care of the eventual surplus knitters—install enough additional equipment to take up the slack in skilled labor, or operate machines two or three shifts on the single unit plan. The effect of either would be in the direction of reducing cost of production, and as lower cost, theoretically, at least, stimulates consumption, there would appear method in the single unit tri-shift suggestion, since it would be a simpler matter to keep output adjusted to market absorption than with installation of excess equipment, to be in use only part time, on occasion. As was held by one manufacturer, "Approaching the problem from several angles, we are confronted with the question of what to do with the surplus of knitters which we supply with the two-machine system, or what can we do with the accumulation of hosiery likely to result from employing a surplus of knitters which we created?"

Manufacturers employing the two-machine system declare they never will depart from it so long as it remains a factor in successful competition. The managing executive of one of the more important mills in the South states, in response to a request for his views, that he prefers the single unit plan. One in Philadelphia, who has been giving much thought to the subject, favors "any policy that keeps employees satisfied and enables mills to operate profitably." He scouts the idea of a surplus of skilled knitters resulting from universal adoption of the two-machine plan. He said, "We do not have enough knitters sufficiently skilled to run our plant on the dual machine plan. There are now many idle knitters, but they are idle either from choice or because the better mechanics are filling all the jobs."

The problem of the practicability of the dual machine system, it appears, will have to be worked out by the manufacturers themselves.

SOME knitting mill men believe that the problem of a surplus of knitters with the two-machine system in full-fashioned mills will take care of itself. Others object to the idea on the ground that this is an obstacle, and for other reasons. In any case, Mr. Reifsneider's discussion of the idea of having one full-fashioned knitter operate two machines instead of one, using a helper, will be of interest in showing what has been done along this line, and in reflecting the conflicting viewpoints of some of the industry's members on the subject.—The Editor.

Hosiery production seems ample, new plants are in process of organization and some old ones are being enlarged and, in sequence, competition is increasingly keen. From the side lines it looks as if, as in other fields in the past, the full-fashioned hosiery industry will work out its salvation in conformity with the unwritten law of supply and demand. Back in the years of which only the older generation has any recollection, the coming of the reaper and binder drawn by three to four horses was deplored because the machines would leave thousands of farm laborers without employment in harvest time. Yet agriculture is the one industry in which there is a scarcity of help. Within a few years after the introduction of the linotype and monotype machines, compositors "sticking type" by hand were as scarce as cotton stockings on Fifth avenue.

Competition in fineness and perfection of full-fashioned hosiery should make for demand for skilled knitters, regardless of the number of learners of today who will enter the field of finished craftsmen a few years hence, and those not able to measure up to manufacturers' exactions will be absorbed in new industries and old ones that cannot but expand. The plan of the Ajax Hosiery Mills, for instructing no more learners than may be reasonably expected to be needed with the enlargement of the plant, bears the earmarks of soundness.

It may be assumed that most manufacturers will be disposed to operate their plants accordingly as the output can be marketed profitably, and that the wisdom of employing the two-machine system will be treated individually, as are overtime and two shift schedules. William Pepper, president of the Cadet Knitting Co., is quoted as strongly favorable to the restricting of production of full-fashioned silk hosiery to single shifts. The result of operating two and three shifts for months, he is quoted as saying, has been a surplus of goods at low prices to meet buyers' demands. "The Cadet is operating two shifts, but only because we must compete with manufacturers who are out for the volume trade," Mr. Pepper explained.

That answers why the two-machine system is installed in some full-fashioned hosiery mills and will be in others.

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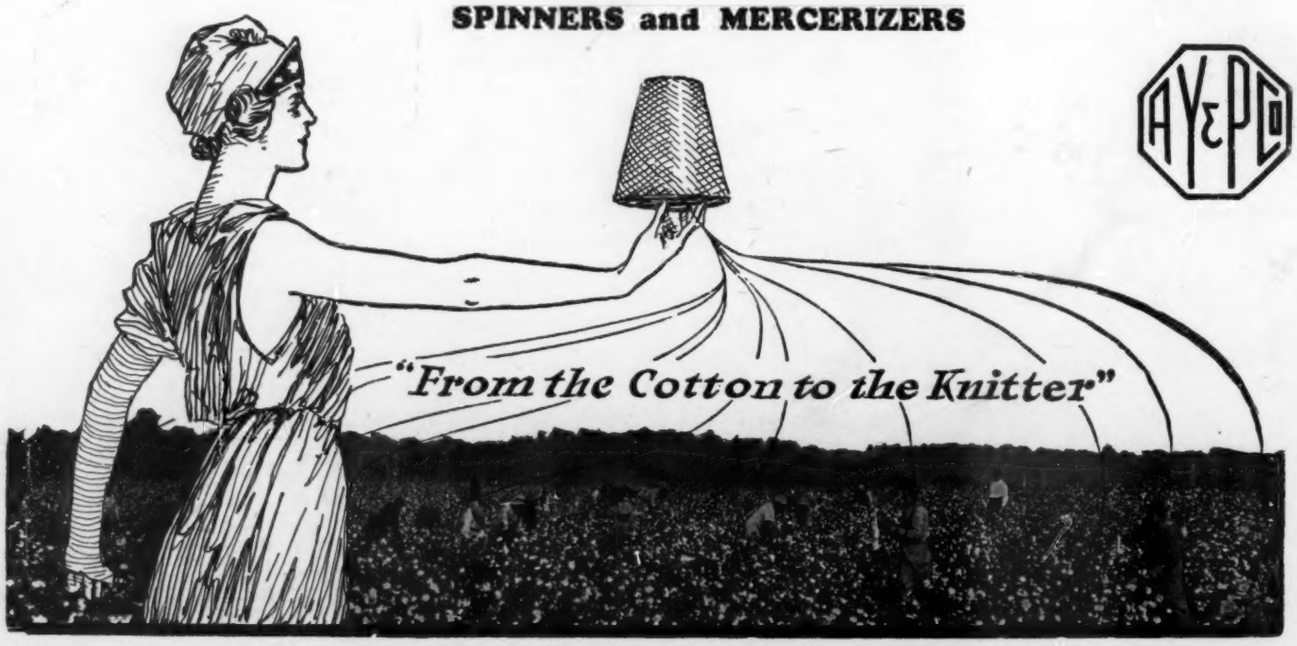

Problems *in* Manufacturing *FULL FASHIONED HOSIERY*

By C. H. Baxter

Article 6—Looping and Seaming

THIS article resumes Mr. Baxter's series on full-fashioned hosiery manufacturing problems. It covers the looping and seaming operations, and gives remedies for dropping and cutting stitches and other defects which produce trouble and seconds. These suggestions are based on years of practical experience. The next article will continue the discussion of manufacturing problems, carrying it on to the next process, and at the conclusion of the series as originally planned, Mr. Baxter has promised us an interesting article on a related subject which we know will be well received by all readers. —The Editor.

THE looping and seaming operations in connection with the manufacturing of full-fashioned hosiery are two operations, that as a rule are not difficult, but at times the machines that are used for these two operations present certain problems of adjustment and it is necessary to know how to make these adjustments to overcome certain difficulties; otherwise, many so-called seconds or spoiled hosiery will be the result.

In the looping operation the cause for seconds or spoilage of hosiery is generally due to three things. First, of course, is that the operator of a looping machine is either inexperienced or careless, and the result is that many stitches are dropped because the heels and toes were not topped properly on the looping machine.

The second cause is stitches dropping because the needle is set wrong or that the hook is set wrong.

The third cause, which usually results in the stocking being spoiled entirely, is the cutting off of the stitches. This is usually caused by the wrong setting of the cutting knives or a burr on the end of the needle point.

In this article I shall endeavor to show the readers how looping and seaming machines should be adjusted so that the percentage of seconds and spoilage can be lessened.

Let us say that an operator of a looping machine is having trouble in the cutting off of the stitches and that the machine is not looping properly, thereby causing many drop stitches. The first thing that one should look at for trouble of this kind is to see if the knives are either dull or have not been set properly. If the knives are dull, then they should be taken out and sharpened and then placed back in position.

In placing knives in a looping machine, one must know how to set them in the propor position, otherwise the knives will cut the stitches that are to be looped.

There are two knives to each looping machine and the action of cutting is similar to the action of cutting with a pair of scissors. The first knife that should be set is the lower knife. When setting this knife the position should be that the cutting edge of the lower knife is just at the edge of the brass ring that holds the points. Never set the lower knife beyond the brass ring, otherwise the stitches will be cut. (See Fig. 1.)

When the lower knife has been set in position, then start setting the upper knife in position. In setting the upper knife, first turn the machine where the two cutting edges of the knives come together, or, in other words, at the point where the knives have just finished cutting the heel and toe tabs. The upper knife should then be set so that when the cutting edges of the two knives come together, there should be a little opening on one end of the cutting edges as shown in Fig. 2.

The reason for having this opening is that the knives will make a cleaner cut and there is less danger of the tabs jamming in the knives. This is very important when setting knives, as jamming of tabs when not seen by the operator, will spoil the stocking and many times break the needle and also bend or break off points.

After the knives have been set in position, then it is necessary to raise or lower the lower knife, so that it will cut the first row of stitches above the loose course. The screw on the trimmer frame is the adjustment for this, and by turning this screw the proper adjustment can be made. One should always be sure to have a little clearance between the lower knife and the brass point ring, otherwise, the cutting will be too close to the loose course stitch and will result in these being cut, thereby spoiling the stocking.

After the knives have been set properly, look at the trimmer brush and see if this is adjusted to the proper height. The trimmer brush should be set so that the bristles will clean off the fuzz made through

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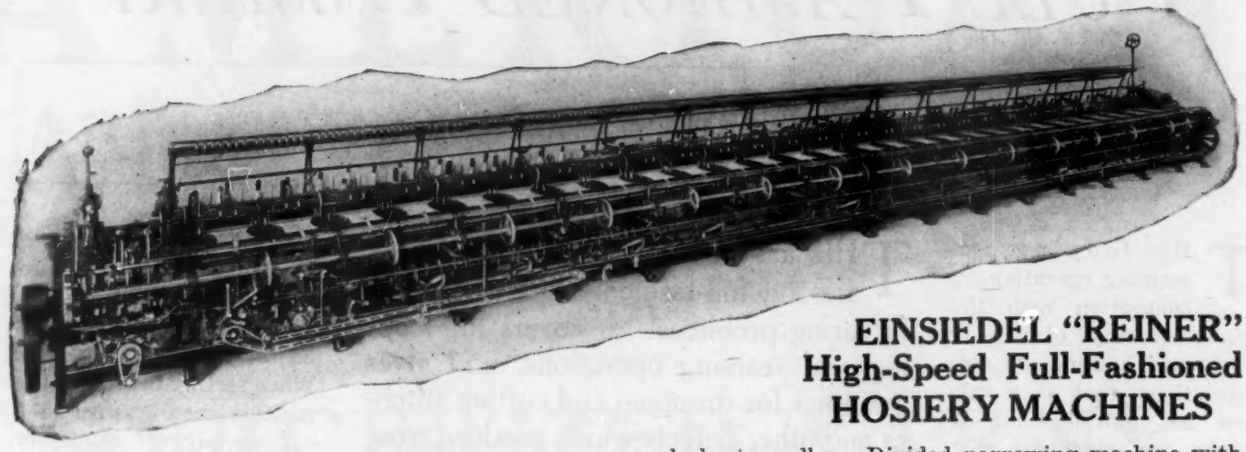

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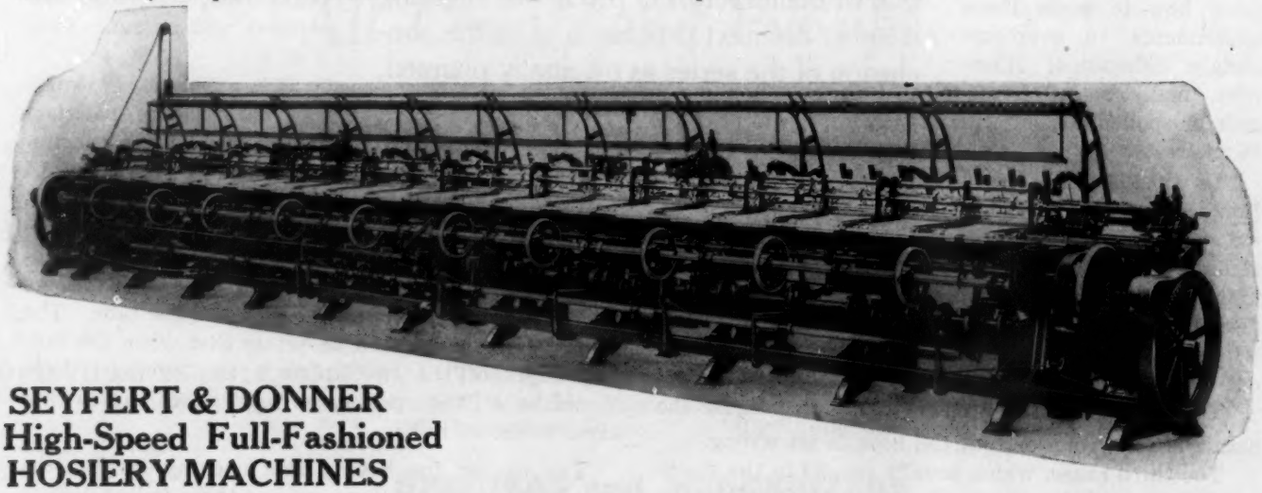

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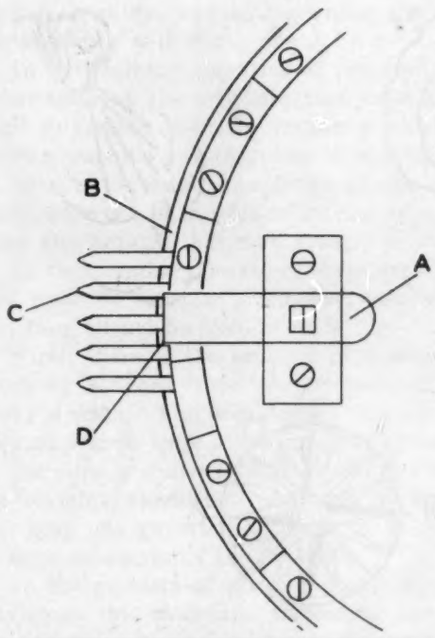
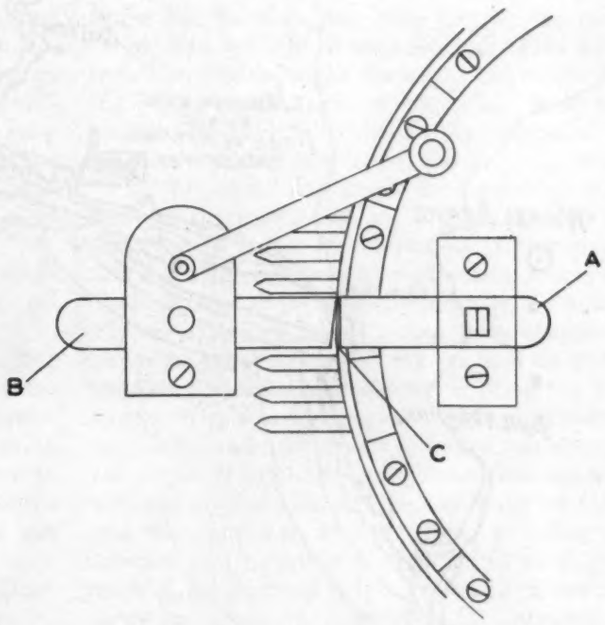


LOWER KNIFE SETTING

A LOWER KNIFE
B LOOPER POINT
C END OF BRASS RING HOLDING POINT
D SHOWING PROPER SETTING OF LOWER KNIFE

FIG. 1



UPPER KNIFE SETTING

A LOWER KNIFE
B UPPER KNIFE
C SHOWING OPENING WHEN SETTING UPPER KNIFE

FIG. 2

cutting, but should not bear down too hard on the cut surface of the stitches.

When drop stitches occur in looping, the first thing one must examine is the needle to see if it is set properly. Most drop stitches in looping are caused by the needle either being too high so that it does not press down into the groove of the looper point or because it does not run in the groove of the point.

In setting a new needle in a looping machine, the points of the needle should set firmly into the groove of the looper point at the point where the needle enters in the groove of the looper point, just before the needle picks up the stitch. Do not set the needle too low, otherwise the needle will sometimes jump out of the groove of the looper point and a drop stitch will result. If the needle does not set firmly at the point described, it will also fail to pick up the stitch.

The drawing in Fig. 3 will show the proper setting of looper needle.

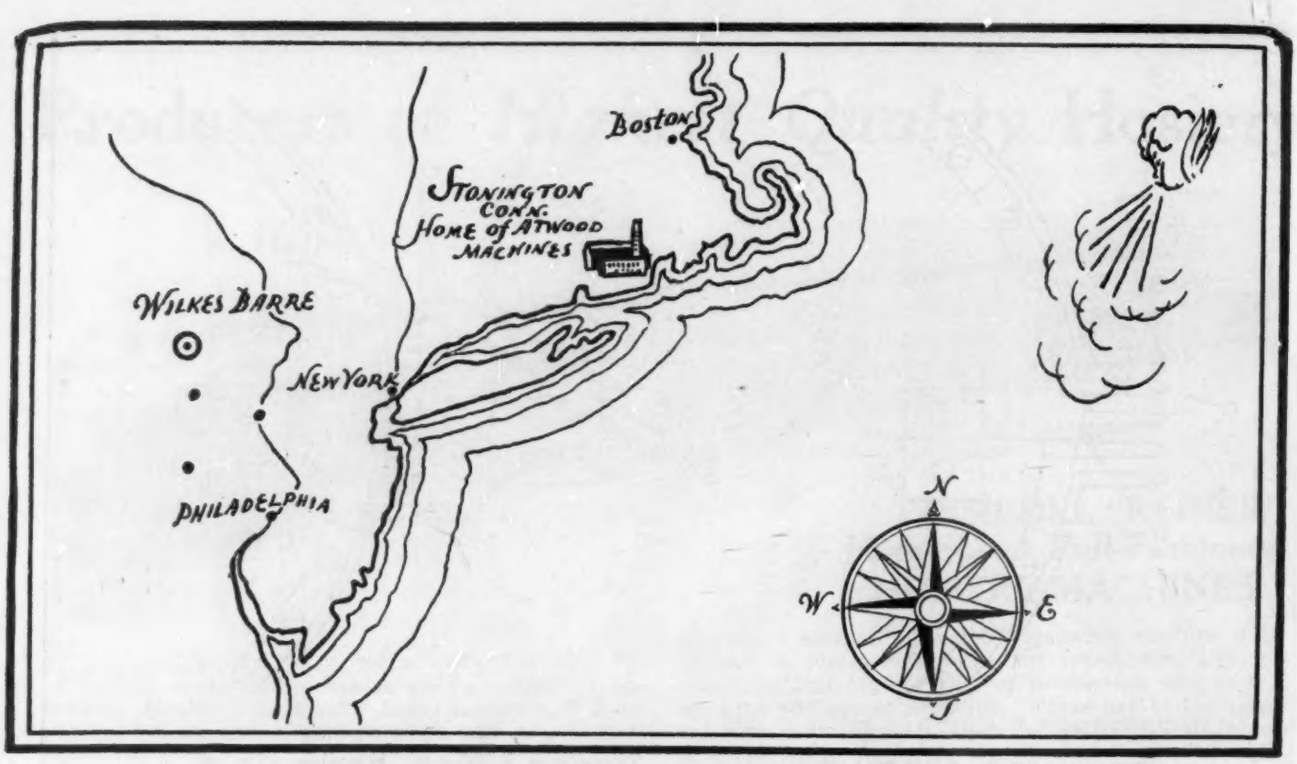
When setting a needle, always be sure to have the needle point enter into the center of the groove of the looper point. If the needle should not enter the groove properly, merely bend the needle with the fingers until it does enter into the center of the groove. Never use pliers for bending looper needles, as pliers will bend the needle out of shape.

Another cause for drop stitches in looping is that the hook is not set so that it picks up the thread as the needle returns back after passing through the groove of the looper point.

This looper hook should be set so that when it picks up the thread, the hook should be close to the edge of the needle, but not so close that it strikes the needle. There are two different types of needles used today on some machines. One needle has the eye on the side and the latest needle has the eye in the center of the needle. I find that the needle with the eye in the center gives less trouble, as far as the hook picking up the thread is concerned, as the thread loop is much larger when the eye in the center needle is used.

Thread breaking is another thing that sometimes occurs on looping machines, and the cause for this is that the needle may be too low or that the hook is set so that it is too close to the needle and picks up two threads instead of one. This occurs when the needle with the eye on the side is used and by setting the hook away from the needle so that it picks up one thread only as per the drawing in Fig. 4, the thread breaking will stop.

Another cause for thread breakage is that the stitch finger is set too close to the needle at the point where the needle enters the points, and this causes the threads to bind and break. By giving more clearance here, this will stop thread breaking. I also find it advisable to bend the end of the stitch finger so that this end does not rest too tight on the point and gives more space for the threads and chain to pass through. (See Fig. 5.)



ATWOOD ESTABLISHES NEW SERVICE BRANCH

New Service Post in Pennsylvania to Be Headed by John R. Breen

John R. Breen, recently appointed manager of Atwood's New Service Branch, Wilkes-Barre, Pa.

TO render an additional service to the manufacturer of Silks and Rayons and to place at their disposal a man of Mr. Breen's broad experience as an engineer of Atwood machinery, a man understanding their needs and problems, The Atwood Machine Company has established this new post in Wilkes-Barre, Pennsylvania.

From this office at 956 Miner's Bank Building, Mr. Breen is ready at any time to give greater aid to Atwood's host of friends and customers in the heart of the silk industry of Pennsylvania district. Here, replacement parts are stored affording to the mill very quick delivery of its needs.

Through this added medium, Atwood hopes to broaden the work and field of its engineers who are ever experimenting and developing at the home plant in Stonington, Connecticut. Through this new contact they intend to continue their modernization campaign and to establish in the Silk Mills of the country the Atwood Standards of Performance now embodied in their complete line of Silk and Rayon Throwing Machinery.

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Stonington, Connecticut

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When the tension is too tight on either the needle side or the hook side of the thread, this will cause thread breaking, and by loosening the tension cups the breaking will stop.

In the seaming operation of full-fashioned hosiery manufacturing the problems that arise are more difficult to remedy than the problems which occur on a looping machine and therefore it is necessary for one to have a thorough knowledge of the seaming machine, in order to be able to fix and adjust it to overcome any trouble that may arise.

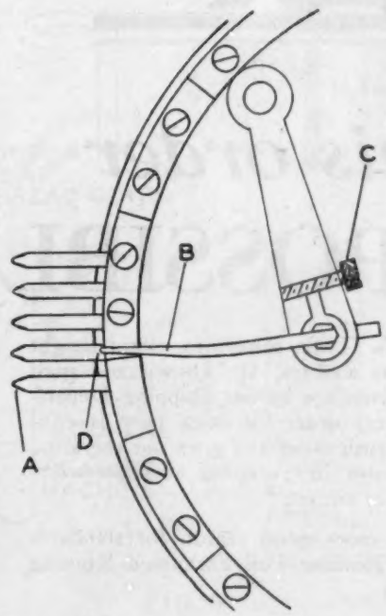
In the seaming operation, there are several things that must be constantly watched, and when they occur, they should be fixed at once.

First, there is the problem of a seaming machine dropping stitches, then the problem of making too heavy a seam. The breaking of threads, the overlapping of seams, loose stitching and the seam jamming in the cups are many of the problems that arise in the seaming operation. Any one of these problems will keep one guessing at times as to just what can be done to overcome the trouble.

In the problem of stitches dropping, many things may cause this to occur. In looking for this trouble, the first thing to do is to see if the machine has been threaded properly. Many times the operator will, through inexperience or forgetfulness, thread up the machine and forget a hole or two and then wonder why the machine will not make a proper seam. If the machine is threaded up properly, then look at the looper bar thread guide (See Fig. 6) for the needle thread and see if it is back too far. This guide controls the tension of the thread as the needle is forming a loop for the looper to enter into. Many times by setting this guide forward for the purpose of holding the thread firmer, it will stop the dropping of stitches.

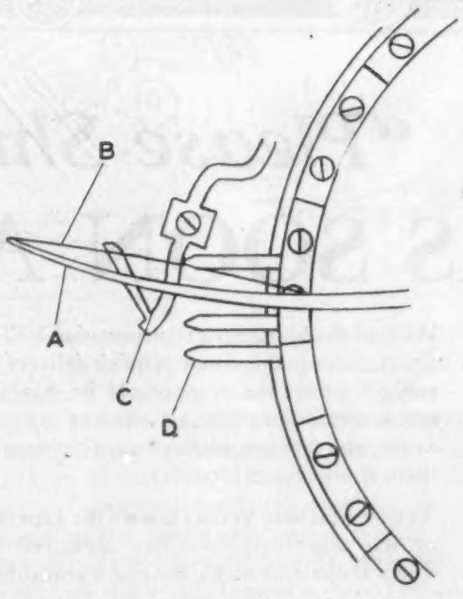
If this is not the cause, then examine the movement of the needle and see if it enters into the loop made by the looper at the rear of the inside cup and also see if the needle is forward enough when the needle is in front or through the needle guard holder (See Fig. 6) so that it forms a loop large enough for the looper to go through for the purpose of picking up the loop. Also see that the looper (See Fig 6) is set so that it almost touches the needle as it passes over the needle while the needle is in the guard holder. If the looper is too high as it passes over the needle, it will not always pick up the loop made by the needle and this results in drop stitches. To bring a needle forward and push it back, the adjustment should be made at the bushing in the inside of the machine that holds the needle bar together. By loosening the two screws in this bushing the needle bar can be pushed forward or back or turned to set the needle in the center of the stitch tongue support (See Fig. 7).

This is one of the important adjustment points



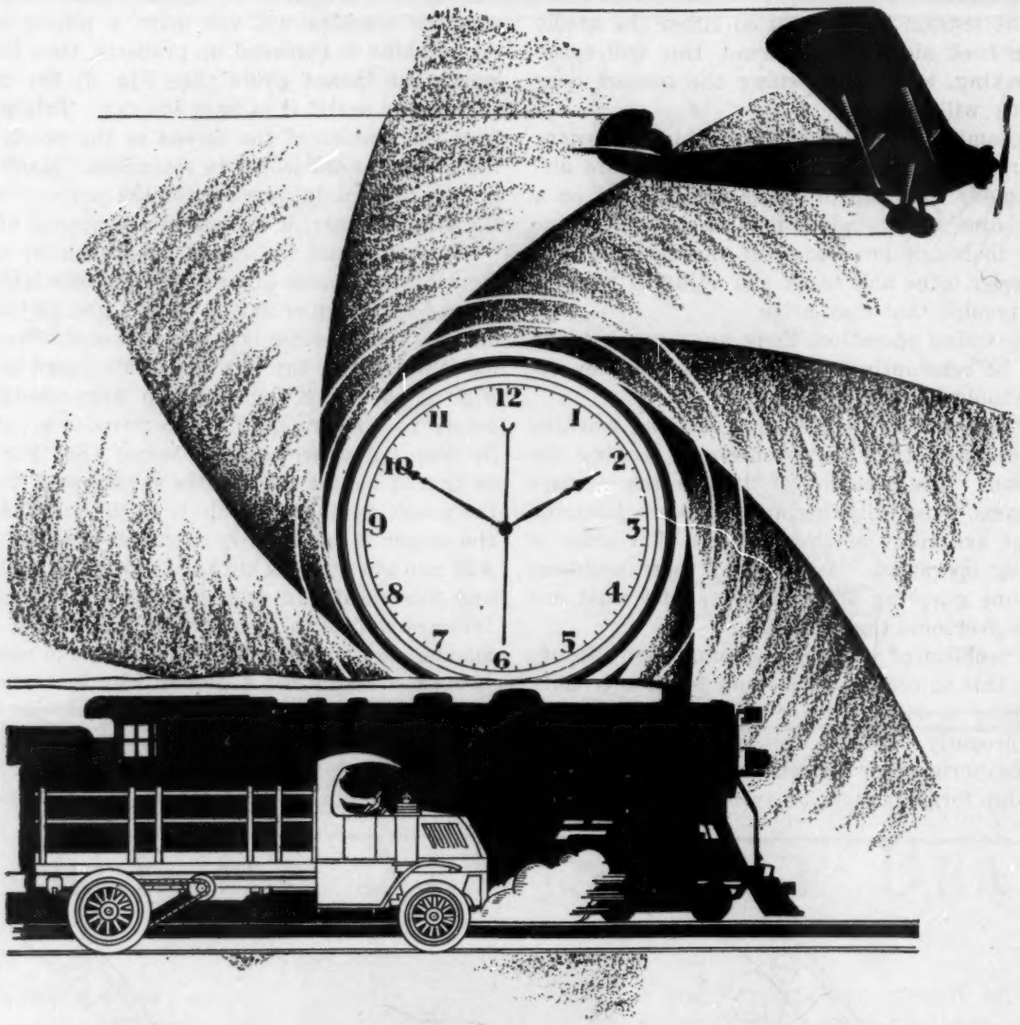
A LOOPER POINTS
B LOOPER NEEDLE
C ADJUSTING SCREW FOR RAISING OR LOWERING NEEDLE
D SHOWING NEEDLE POINT SETTING INTO GROOVE OF LOOPER POINT

FIG. 3



A LOOPER NEEDLE
B THREAD ON NEEDLE SIDE SHOWING LOOP FORMED
C LOOPER POINTS
D SETTING OF LOOPER HOOK TO CATCH LOOP MADE BY NEEDLE THREAD

FIG. 4



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on a seaming machine and should be known by all who fix seaming machines. If one wants to raise the seaming needle for the purpose of making more clearance when the needle enters the stitch tongue support and needle guard holder, the adjustment should be made at the needle holder. (See Fig. 7). This holder is the one where the needle is placed when a needle is put into a seaming machine and there are two screws that are loosened when one wishes to raise or lower this holder.

Raising the stitch tongue (See Fig. 7) by packing paper underneath the tongue between the two screws will stop the dropping of stitches as this will make a larger needle loop for the looper to go through. Raising the stitch tongue is advisable at all times, as this will allow the seam to go through the cups without binding and a better and evener seam is the result. Sometimes it is necessary to move the needle a trifle to the left or right of the groove in the guard holder instead of having it center for the purpose of stopping drop stitches.

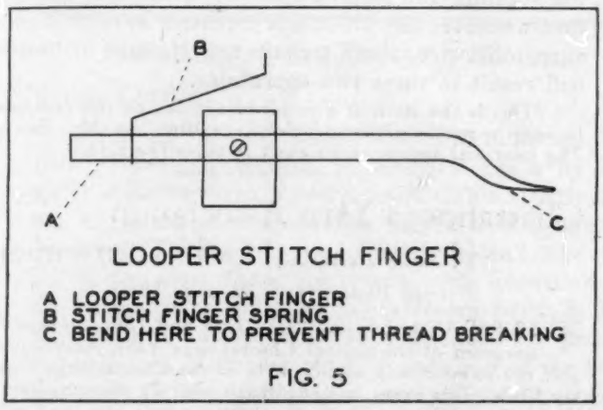


FIG. 5

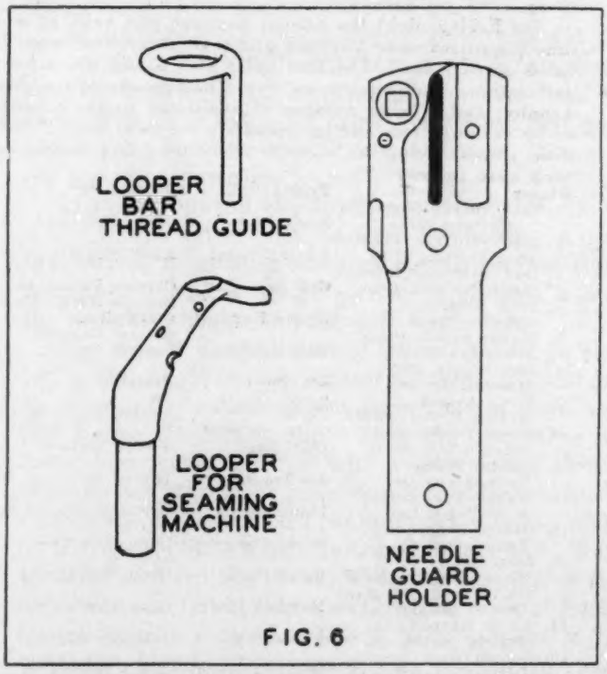


FIG. 6

To make a fine seam, or in other words, take in less of the selvage, the adjustment is at the fabric uncurler bracket (See Fig. 8). By lowering this bracket, a finer seam can be obtained, and by raising the bracket a heavier seam will be had.

To many who are not familiar with the adjustments of a seaming machine, it would seem that lowering this bracket would make a heavier seam and raising the bracket would make a finer seam, but this is not the case, and the adjustment must be made as I have described to get the proper results.

In the matter of not taking in the seam properly or overlapping as it is sometimes called, the trouble is that either not enough selvage is taken up in the seam, or, in other words, making a seam too fine. By raising the fabric uncurler bracket a trifle, this will stop the overlapping of the seam. Another cause for overlapping is that the fabric uncurler is forward too far or back too far. By loosening the two screws holding the fabric uncurler to the bracket and either bringing the uncurler forward or pushing it backward, will stop the overlapping. The fabric uncurler (See Fig. 8) should be set so that the center piece that separates the two selvages is directly in the center where the two cups come together so that the fabric will enter the cup evenly on both sides of the selvage.

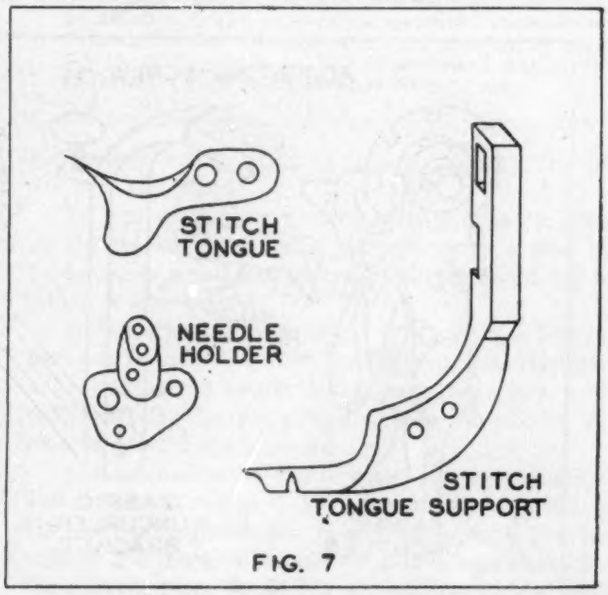


FIG. 7

In the matter of the breaking of threads, this is sometimes caused by too tight a tension. By loosening up the tension cups, this will stop the breaking. Another cause for breaking of the thread on the needle side is that there is a cut or nick in the stitch tongue. Examine the stitch tongue when breaking of thread on the needle side occurs, and if cut or nicked, remove the cut by rubbing down with fine emery cloth or replace the stitch tongue with a new one. Thread breaking on the needle side is also caused by the needle being too low in the needle guard holder and by raising the needle to give more clearance, while in the holder, this will stop the breaking of the thread.

The breaking of the thread on the looper side is caused by either too much tension on the thread or else the needle is cutting the thread as it goes through the loop made by the looper when the needle and looper are in the rear cups. By pushing the looper so that the needle enters the loop nearer to the looper

retainer (See Fig. 8) which is fastened to the looper, the needle will clear the loop and avoid cutting the thread.

Thread breaking will occur because of faulty cone winding and by changing cones will sometimes stop the breaking of threads. In fact, this is what one should do first when thread breaking occurs to see if the trouble lies in the seaming thread used or sticking of threads on the cone.

In looping and seaming, the kind and size of thread used has a great deal to do with the trouble one has in connection with the proper operation of these machines, and it is very important that proper threads are used at all times. For looping I find that 50s/2 mercerized and gassed yarn is the best yarn to use for looping all styles up to eight-strand hosiery. For heavy hosiery, 40s/2 yarn should be used for looping.

When a colored loop is desired to match colored picot top, a resist dye thread is generally used. I use for resist dye a 30s/2 spun silk with a hard twist for looping of this kind and find it very satisfactory.

For seaming, I use 50s/2 yarn for hosiery made from nine strands or more of silk. For seven and

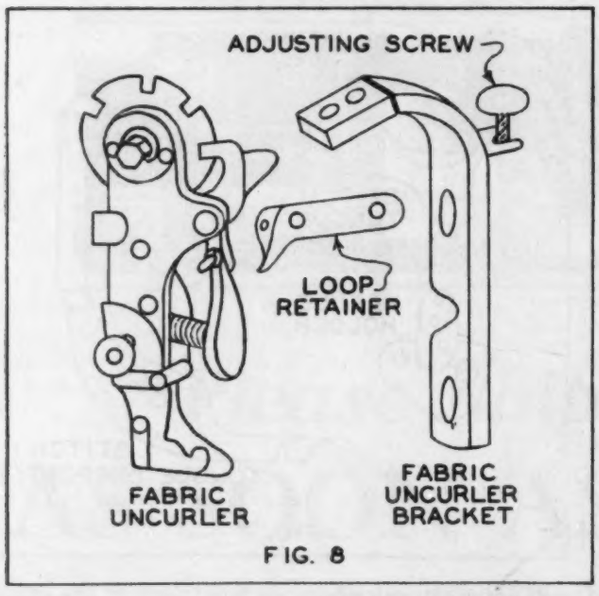


FIG. 8

eight strand hosiery, I use 60s/2 yarn. For hosiery made out of four and five thread I use 80s/2 yarn. In an all-silk number I use a 40s/2 spun silk, and with this size yarn I have been able to get a fine or small seam so much desired today. In this connection I might say that when a fine seam is desired the size of yarn used is very important, as it is necessary to use a fine size yarn to obtain a small seam and still the yarn must be strong, otherwise the seam will break out when worn. If by using finer size yarn the seam is still too heavy, then possibly it lies in the fact that the stitch tongue support is heavy or thick type, and by writing the manufacturer of seaming machines, they will send a stitch tongue support, which they now make for the purpose of making a finer seam. This new stitch tongue support has been helpful in making a smaller or finer seam in chiffon hosiery, and the result is, that the seam in a chiffon hose has a much better appearance because of the small seam.

In finishing this article, I might state that the makes of looping and seaming machines I have written about are the Sotco and Wright Steady Dial loopers and Union Special seaming machines.

Some manufacturers use the German makes of seaming and looping machines, and while they are somewhat different mechanically, the trouble that arises in the seaming and looping operations are about the same, regardless of what make machine is used.

I have tried in this article to outline as best I could, how to overcome problems in connection with the seaming and looping operations, and can only say that whenever any trouble is reported, have it fixed at once, otherwise, many seconds and spoilage of hosiery will result in these two operations.

(This is the sixth of a series of articles on full-fashioned hosiery manufacturing problems, written by Mr. Baxter. The next will appear in an early issue.—The Editor.)

Chattanooga Yarn Association Holds Annual Golf Tournament

(See Photograph on page 898.)

THURSDAY and Friday, May 16th and 17th, marked the occasion of the annual Chattanooga Yarn Association's golf tournament and outing, held at the Chattanooga Country Club. This event is staged each year by the members of the yarn association, with the knitting mill men and other textile factors of the section as guests.

The main scheduled feature was the golf tournament, a 36-hole event, held on Thursday afternoon and Friday afternoon. On Thursday night, the members and their guests repaired to Fairyland Inn, atop Lookout Mountain where a special putting contest was held on the Tom Thumb course there.

On Friday night the annual banquet was held, at which time the prizes were awarded and several entertainment features carried out. The first prize was a cup given by the association, and known as the Chattanooga Yarn Men's Trophy, and a large number of additional prizes contributed by various firms and individuals were awarded. A list of these prizes, giving the name of the winner and the donor in each case follows:

Winner	Prize	Donated By
1. H. T. Bryan Champion Knitting Mills	Steak Platter	Oscar Heineman Corp.
2. Clyde Wilkins, Champion Knitting Mills	Silver Pitcher	Aberfoyle Mfg. Co.
3. Dudley Bryan, Tubize Artificial Silk Co.	Golf Bag	Charles Paulus and Laconia Needle Co.
4. Fred Scholler, Scholler Bros.	Zipper Bag	COTTON
5. Walter Seidel, Oscar Heineman Corp.	Candle Sticks	Central Franklin Process Co.
6. Sam Diggle, Dixie Mercerizing Co.	Ice Bowl	Hemphill Co.
7. R. C. Aycock, Aycock Hosiery Mills	Flask	Stetton Dryform Co.
8. Floyd Dooley, Johnson City Mills	Golf Bag	George Wallace
9. Charles Hall, Kaumagraph Co.	Ice Tea Set	Tubize Artificial Silk Co.
10. Walter Toy, Scott & Williams, Inc.	Drinking Set	Industrial Rayon Co.
11. George Porges, Kaumagraph Co.	Silver Compote	Laros Silk Co.
12. John Kain, Signal Knitting Mills	Salad Bowl	Dixie Mercerizing Co.
13. Jop Rickman, Standard-Coosa-Thatcher Co.	Matched Clubs	Cannon Mills, Inc.
14. A. A. Murphy, Industrial Rayon Co.	Flower Vase	Johnston Mills
15. George West, Dixie Mercerizing Co.	Matched Woods	Leslie Oswald of Paramount Co.
16. Tom Oliver, Oliver Knitting Co.	Salad Bowl	Payson Yarn Co.
17. W. J. Henderson, Standard-Coosa Thatcher Co.	2 Dozen Balls	Franklin Needle Co.
18. R. B. Davenport, Jr., Davenport Hosiery Mills	Cocktail Shaker	John Lovell

The Kaumagraph Co. also awarded a nineteenth prize for the low ball medal play foursome in the putting contest on the Tom Thumb course. Burton Frierson, Dixie Mercerizing Co., and Harvey Wilson, Richmond Hosiery Mills, won pocket books in this contest, and W. H. Willard, National Aniline & Chemical Co., and T. C. Barber, of the Renfro Hosiery Mills, won corkscrews.

Belting on the Knitting Machine.

EDITOR COTTON:

Referring to the article by "CONTRIBUTOR NO. 1010" regarding belting, in which he says he has watched fixers when a belt breaks. This contributor has the right idea about the way a belt should be fixed, with one exception, namely, I don't like the hooks, for more than one reason. One objection is, the style hook to which he has reference has to be applied with a hammer. These hooks take up around one-half inch of leather stock on each end of the belt. Naturally, if this belt breaks, one piece of it is lost. They break constantly, because every time this bradded hook passes over the pulley the strain is very great, and soon breaks. It is logical to believe that if the belt is put together on a hinge it will last longer. What I mean by hinge is, to lace the belt with wire lacing, using the raw-hide pin.

At one time I kept the supply room and did the buying for a large mill, and there was a constant call for belt hooks. After considering the wire base we decided to try it out. We drove everything that goes into a yarn and hosiery mill and dyehouse. The saving was very noticeable.

If "CONTRIBUTOR NO. 1010" would try this out he might like it better than he likes the hooks. A belt that drives a knitting machine should be just tight enough to keep the machine from being lazy, and if the machine should jam, the belt would slip.

The tanned, or outer part of the belt should go next to the pulley. It is the toughest surface. Oil will get on these belts, gathering lint from time to time, and this causes the belt to slip. Then the first thing we know, here comes a fellow with a belt-brush. Now I suppose this is common practice. The reader will know that this is a piece of card clothing tacked onto a piece of board—but it is a belt destroyer, and why? Well, the wire is sharp and it very soon cuts the skin of the belt away and leaves only a soft, porous piece of leather. A belt is somewhat like a baby; it has to be watched. Some fellows use a piece of soap to clean the belt; some rosin, and no telling what else. I use a damp cloth to clean the lint from the belt. Soap and rosin tend to harden the leather, and they lessen the life of the belt considerably.

At closing time, on Saturdays, after all have gone, I get some neatsfoot oil and apply it on the belts with a small brush, running the belts for at least fifteen or twenty minutes. These are the counter and main drive belts. By running them, the oil distributes itself evenly, and by starting time on Monday, the belts are soft and pliable.

Of course there are many good grades of belting on the market. I will not attempt to tell a man how to decide on a belt, but will say that he should buy one which is guaranteed.

If "CONTRIBUTOR NO. 1010" will try these few suggestions he may like them, and he may not. However, a fixer is only a human being, and if he fixes a belt too tight, don't be too rough on him, for the lot of a fixer is a hard one, anyway.

But in conclusion—getting away from my subject somewhat—let me say, the superintendent should get the cost of supplies for each month, have the boss knitter and machine fixers in his office and show them the charges from the supply room. It may help somewhat in reducing the cost.

CONTRIBUTOR NO. 4103.

Cleaning Circular Knitting Machines.

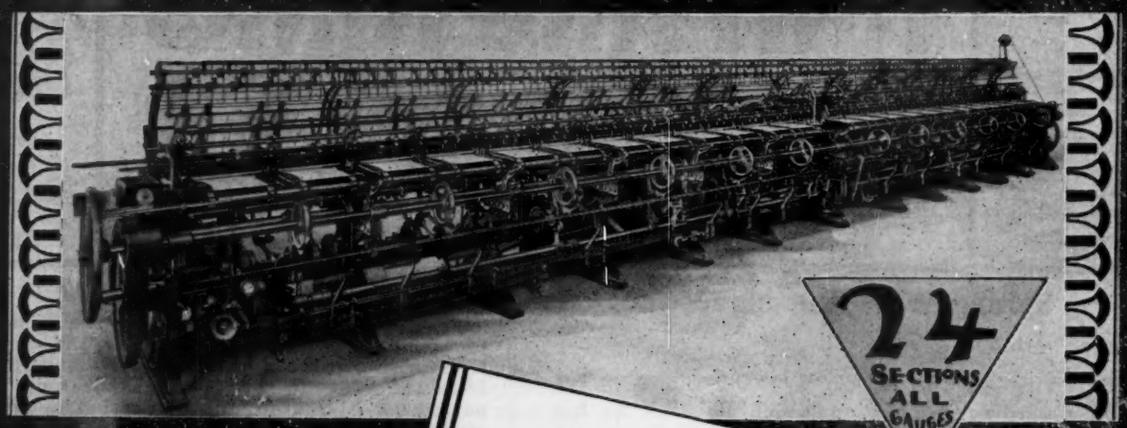
EDITOR COTTON:

You have been publishing some interesting letters with regard to different methods of cleaning circular knitting machines. These discussions were started by an inquiry several months ago from a man who wanted to get some opinions as to the advisability of using compressed air and also whether anyone among your readers had tried the vacuum system of cleaning.

I have never used the vacuum system. The mill at which I am now located has no compressed air equipment, so that at the present time we employ the old time manual method of cleaning the heads of the machines.

However, I have always used the compressed air method, and like it very much, and plan eventually to

We invite our readers to make use of this department for the discussion of any and all problems arising in connection with the knitting mill from the office to the packing and shipping departments. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. All questions will be answered as promptly as possible. The names and addresses of the contributors must be given, but will be held in confidence and a pen name substituted when printed. All accepted contributions other than questions will be paid for after publication. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so endorsed. This department is open to all.



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equip this plant with it.

Your original inquirer brought up the point that with the compressed air one stocking on each machine must catch blown lint, grit, dirt and oil. I cannot understand what he means by this, because I do not believe it is advisable to clean the machines while they are in operation, and so I cannot see how this would be probable. My customary method of doing the cleaning is to have this done twice a week, say on Wednesdays and Saturdays. At one plant with which I was connected I had ten fixers, and each was allotted a certain time during the change to use the compressed air hose for cleaning. The first man used the air between 7:00 and 7:30 o'clock in the morning, and at the end of his period it was turned over to another man. We placed a curved piece of carton card around the head of the machine while the blowing was taking place so as not to damage the yarn in the yarn stand, etc.

I take it for granted that the reader understands that in addition to this regular cleaning by compressed air, we regularly take out the heads and clean the sinkers with a gouge. On wool work, I believe this should be done thoroughly every three months, although on silk, mercerized and cotton, it is probably all right to have it done twice a year. We would of course make the gouge about three inches long and a half inch wide and as thick as the sinker size of the machine in question.

D. T. (GA.)

Plaiting on the Model K.

EDITOR COTTON:

In regard to the question of "CONTRIBUTOR NO. 4109" who is having plaiting trouble on going inside of the pointed heel, on Scott & Williams Model K machines, 260-needle, 3½-inch. He says that the only way they can get good plaiting is by running an enormous amount of tension on the body yarn and this causes the needles and sinkers to wear out in a short time. The fingers and throat plate become grooved and a number of cut-outs are caused on yarn changes due to the heavy tension on the silk.

The six finger Model K machines which "CONTRIBUTOR NO. 4109" refers to, have two splicing fingers, one for the double sole and one for the tapered heel. The finger for the double sole is nearest the left-hand corner of the thread plate, and as the thread is fed to at least one-half of the needles and the finger lowered and raised at a division of the needles. it can be operated without any tension on the yarn. The tapered heel finger, which is next to the right, must be raised and lowered very quickly and requires a slight tension in order to have it make a clean defined line where it enters and leaves the needles.

"CONTRIBUTOR NO. 4109" states that he uses a 120 mercerized yarn for the plaiting. He does not say, but I believe that it is 120s/2 yarn he is using. The use of the tension tends to bring the yarn to the surface, and in order to make satisfactory work it is necessary to use the same kind of yarn in this finger as in the body of the stocking. A silk stocking requires a silk splicing yarn, but the slight extra cost of this yarn, compared with 120s/2 mercerized, is more than saved in the reduction of seconds due to misplaiting.

CONTRIBUTOR NO. 4116.

A Full-Fashioned Manufacturing Problem.

EDITOR COTTON:

For some time, on our full-fashioned machines, we have had difficulty making a loose loop and dropping the inside selvage stitch in the narrowing motion only.

In order that the problem may be taken up at the place where we are unable to proceed further, we will say that the following have been checked up and corrected as far as our experienced fixers can go, evidenced by the perfect heel selvage in the other part of the heels not in the narrowing portion: Coulier cam gear brake and brake shoe; cam shaft shift regulating brake; shogging cam timing; friction boxes and leathers; carrier stops and carrier settings; snappers, drop wires, tension rings and pads.

We use twelve-thread in the heel, and have tried two six-strand threads as well as a single thread of twelve strands, and resorted to all kinds of tensions for improvement. We have 42-gauge Ludwig 20-section machines.

We shall appreciate any suggestions from readers based upon their experience as to further steps to take toward correcting this difficulty.

CONTRIBUTOR NO. 4572.

Dyeing Mercerized With Silk.

EDITOR COTTON:

In "KNITTING KINKS," a contributor wishes to know how to dye a hose made with mercerized top, heel and toe, but does not state whether he wants a solid color on all three fibers, or the top, heel and toe of a different shade than the boot, nor whether he wants the silk and wool dyed alike or with a shot effect. He only says that he wants to change from plaiting with a boiled-off silk thread to a thread of silk in the gum.

Assuming that he wishes to dye a solid color in the fashionable current shades, he must first of all boil-off or degum the silk covering the wool in the knitted stocking, an easy operation if properly done, but one which will easily ruin the wool if the wrong material is used in boiling off; also the boiling-off in this case must be done in the shortest possible time.

Alkali and alkaline soap must be avoided; furious and prolonged boiling is not necessary and will positively ruin the wool. In fact, a boil-off bath heated not above 200 degrees Fahrenheit is all that is necessary, and nothing but the best olive or neutral soap should be used, and this operation should take no longer than 40 minutes for best results, using about 10 per cent soap. Then a good and thorough washing with warm water to remove all traces of soap is strictly necessary.

The water for the boil-off bath and the washing should be as soft as possible. A good supply if warm water, or an arrangement to heat the cold water in the pipe before it enters the vat or machine where the goods are to be worked should be at hand because

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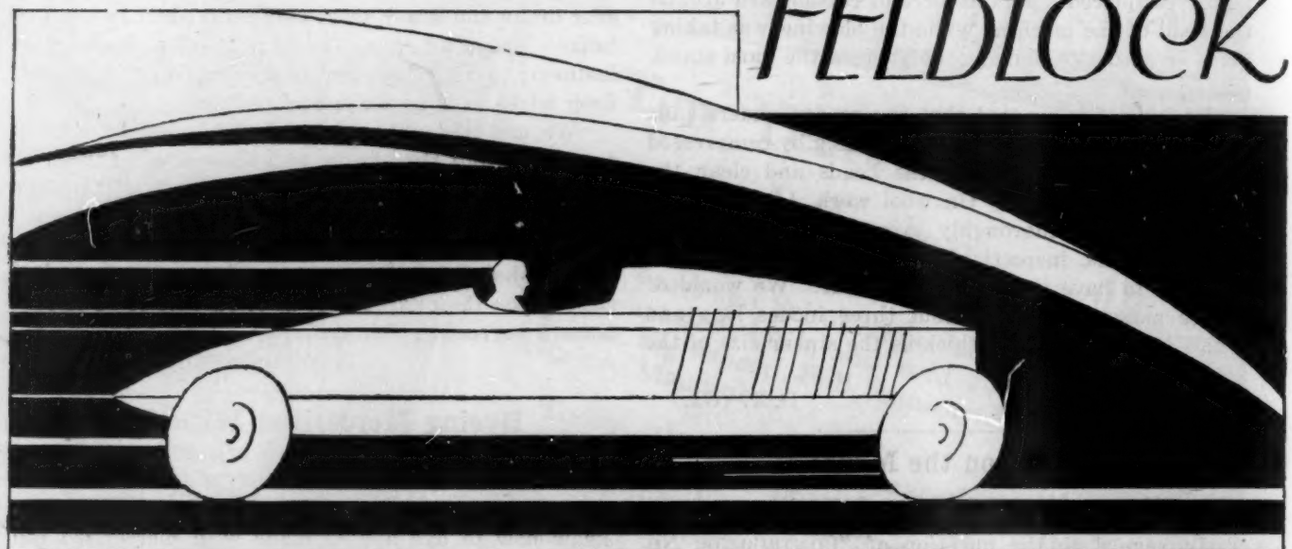

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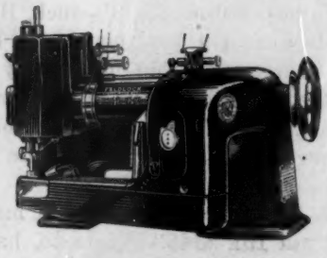

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a sudden chilling of the wool with cold water makes the wool harsh and sticky, and easily shrunk.

When the goods are well-prepared they are more than half-dyed. It is my opinion that most of the troubles that occur in the dyehouse can be traced directly to the improper preparation of the goods previous to dyeing. Badly boiled off and scoured goods, half-washed and carelessly handled hosiery lots are sure to show up in the finished product in streaks, harshness, spots, unevenness and many other imperfections that could easily be avoided by a careful preparation.

In dyeing silk, wool and cotton mixtures, dyestuffs must be selected that dye the three fibers as nearly alike as possible. There are many Benzo and direct colors that may be used, but must be tested in a beaker to see how far each fiber can be dyed, the deficiencies noted and a proper selection made. When a number of the substantive dyes are selected for the desired shades, some neutral or acid dyes are chosen to cover up the deficiencies on the silk or on the wool. Most acid or neutral dyes will dye the silk and the wool very nearly the same shade, except that the silk will take up the color at a temperature of 160 to 175 degrees F. While the wool must be treated at the boil for the dye to go on it.

With the proper dyestuff for a shade to be dyed, work in the bath at about 160 degrees F. for 20 minutes, then add to the bath 10 to 30 per cent Glauber's salt, according to the depth of the shade and the amount of dyestuff. This will make the dyestuff go on the cotton and some on the silk, then bring bath to a boil in 20 minutes to dye the wool. If at this time the wool is not sufficiently dyed, a little addition of acetic or formic acid will make the wool exhaust the bath and come up to a full shade. Small additions of acid or neutral dye can be made safely at this time to darken the silk or the wool if needed, in the cooling bath if for the silk; boiling again if for the wool.

Bearing in mind that the cotton and silk will take up the dye at a temperature of 160 to 175 degrees F., and the wool must be boiled to take up any color, it will be easily seen that for solid shades, with the proper kind and amount of dyestuffs, good dyeing depends chiefly on the proper regulation of the temperature of the bath.

For a good black a mixture of direct and acid black can be used in the proportion of 6 per cent direct and 4 per cent acid black, starting at about 120 degrees F., and raising the temperature to the boil in half-hour. Then add 30 per cent Glauber's salt and work for 20 minutes. Then add 1 per cent formic or 2 per cent acetic acid, working 20 minutes longer. For a soft finish the goods after being dyed and washed are worked in a warm solution of 2 per cent neutral soap for about 10 minutes and washed in warm water.

In my opinion in dyeing wool and silk, the usual rotary type of machines are not the best to use. Rotating and tumbling in the drum, the wool has a tendency to mat, full and shrink. The open vat or the paddle machine is better, but some machines especially constructed for dyeing wool hosiery should be procured for best results.

If everything is carried out as outlined, and the work done in the shortest possible time, a man should have no trouble in preserving the luster of the silk and keeping the wool in good condition.

FARBER.

Some Points on Economy, and Holes on the RI Machine.

EDITOR COTTON:

I have noticed several articles on economy in the knitting mill published in the "KNITTING KINKS" department, and I would like to give a few of my own views along that line.

First, I wish to say that a fixer is handicapped if he does not have the cooperation of the company he is working for. There are some companies that have wasteful policies, but I doubt if they would admit it.

I once worked for a company that had all of its parts, except a few, made in their machine shop. Some of the parts were not so bad, but most of them were not made right. The fixer had to grind, file and rebore 75 per cent of the parts he got, and they did not give the satisfaction that standard parts would have given. If this company had had a good machine shop and capable workmen they might have saved some money.

Recently I saw an article on the RI machine about how to stop holes a little way from the heel in the gore. I, too, would like to offer some suggestions on this. First, see that the sinkers are in good shape and none of them are sharp, rough or broken. If the hole persists in showing up I would suggest this: Adjust the sinker cams so that the sinkers will not come in so far, and see that the knockover cam moves freely and that it is "in" only just far enough to bear gently on the saw tooth sinkers. Adjust the slackening cams so that they will push the saw tooth sinkers far enough to miss the knockover cam. I do not like to cut the saw teeth off of a sinker as it will make a "funny" looking place in the leg of the stocking, also, if it happens to be close to a rib it will give trouble. I am not trying to knock the other fellow, if he has success, good luck to him.

If there are any of the RI fixers who have regular "Jonahs" for clearing up, or make bad "pineapple" tops, or trouble with the "pineapple" attachment breaking needles on the cut-out or make-up; I believe that I can be of some help to you. I will answer any questions possible on the "pineapple" attachment or anything else through the columns of the "Knitting Kinks" department.

CONTRIBUTOR NO. 4200.

Preparing Silk for Full-Fashioned.

EDITOR COTTON:

Information pertaining to the preparation of silk in full-fashioned knitting was requested in a recent issue by "CONTRIBUTOR NO. 4125," who wanted to know whether a sulphonated oil or a combination of neatsfoot or olive oil and olive oil soap was better for soaking silk for full-fashioned tram.

I do not doubt that most of the better known soaking preparations and backwinding solutions have

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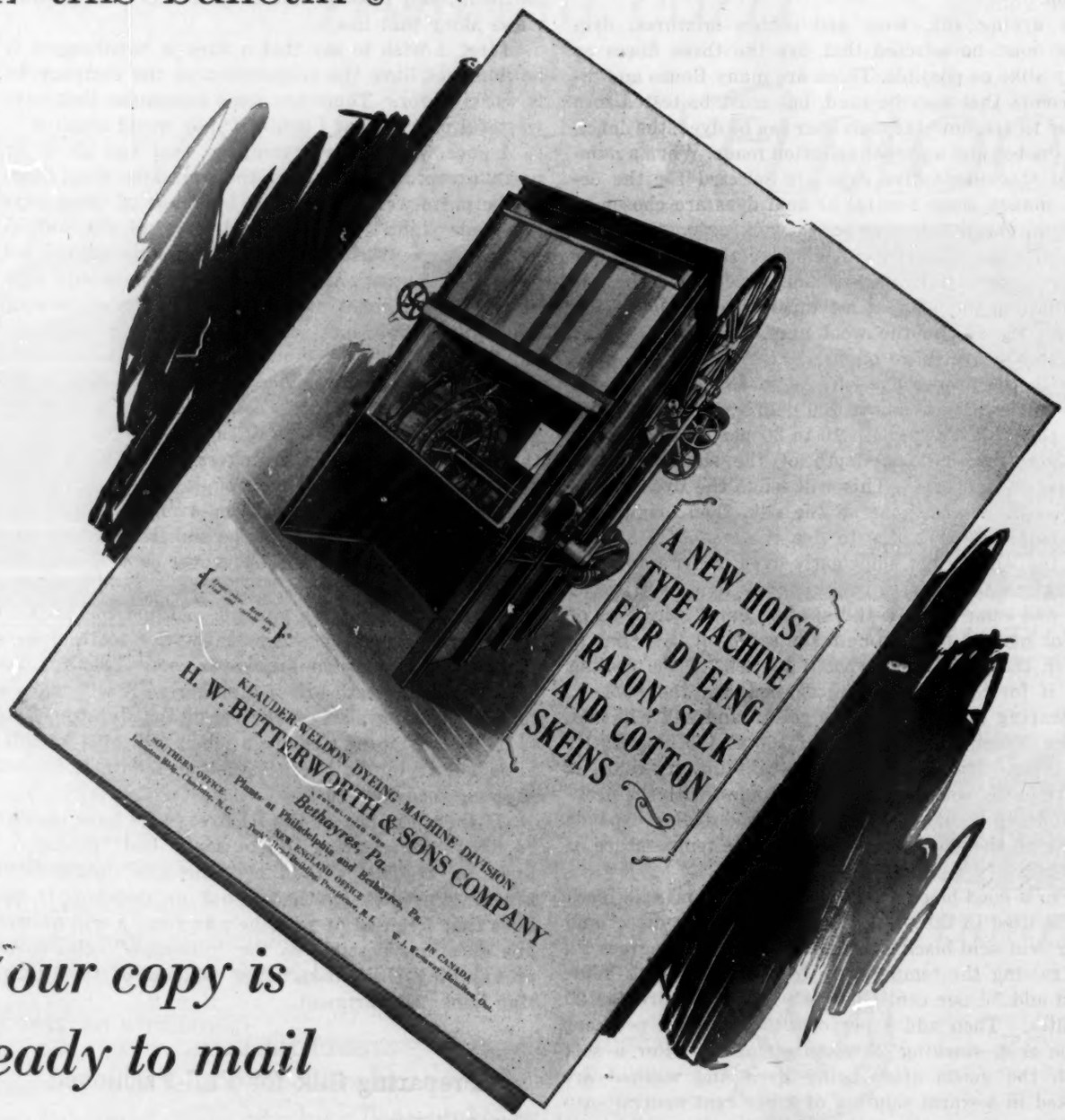
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some virtue if used intelligently. Sulphonated oils are in this class and can certainly be used effectively, though they are perhaps less fool-proof than the olive or neatsfoot oils so generally used. The problem of how to use a given preparation to accomplish certain desired results may often be more important than what to use. For instance, if silk is soaked to render it as soft as possible for the production of smooth and uniform stitch formation in knitting, the gum is quite likely to be excessively softened.

In this connection, since this man also asked about using glycerine in backwinding, if glycerine is used for this purpose, his hygroscopic properties will cause the silk to retain, or even absorb, more moisture. This might easily further soften the gum so that the yarn would stick badly on the cone after only a few hours. If the contributor happens to be soaking his tram so much that the gum is partly dissolved, and is also using glycerine in backwinding, he may be sacrificing smooth running of the yarn from the cone for more even stitch in the formation. The problem in such a case seems to be more a matter of "how much" than "what."

This man wanted to know what to do to prevent sticking of the yarn when backwinding silk is allowed to stand for several hours, and asked whether a very soft wound cone would prevent this. The softer winding would lessen the tendency to stick on the cone, but even then, if the full cones stand in the atmosphere where the surface silk dries appreciably, the outside silk will naturally contract and compress the inner layers, causing them to stick fully as much as with harder winding. B. R. (MASS.)

A Check-Up Between Day and Night Repairs.

EDITOR COTTON:

In most mills which are running night and day shifts, there has always been more or less friction between the machine adjusters who repair the machinery. The night shift puts the blame for any trouble which arises on the day shift, and the day shift puts it on the night shift. Unless there is some way of keeping track of the major adjustments made to the various machines, such as taking the machine apart or putting on a new part, etc., one shift or the other does not know the exact condition of the machine in question, and as a result, there is friction.

If the day fixer makes a certain repair on a machine, and it happens that that particular machine is not in good repair at the time the night man takes it over, it would be to the advantage of the night man to know about it so that he would know what was done and what he would have to watch on it along the run.

As a solution to this problem, I have worked out some night machine repair reports to be made out by each head machinist during his run. I have found these to be of assistance to the machinist by giving him the necessary information concerning the machines at the time he takes them over. The two reports, one for yarn tension adjustments and the other for major adjustments, are shown in the illustrations in the next column.

RYMI.

MAJOR MECHANICAL ADJUSTMENTS MADE TO MACHINES DURING NIGHT RUN

MACHINE NO.	
1	
2	Had trouble with this machine all night breaking transfer bits could not seem to get it timed up Better watch it closely
3	
4	
5	A new outside sinker ring was put on this machine. The old ring had too many broken wall slots.
6	
16	This machine stuck just before quitting time. Did not have time to get it loose.

REMARKS:- Machines in general ran very good

SIGNED H. M.

NIGHT REPORT OF YARN TENSION ADJUSTMENTS

MACHINE NO.	POINTED HEEL		LEG TENSION	
	TIGHTEN	LOOSEN	TIGHTEN	LOOSEN
1	✓			
2			✓	
3		✓		✓
4				
5	✓			
6				✓
7				
8				
9		✓		
10			✓	
11				
12				
13	✓			
14				
15				
16			✓	✓

REMARKS:-

SIGNED H. M.

Operating and Adjusting the Banner Knitting Machine.

PART FIVE

IN this, the fifth article of this series, the writer begins a discussion of common, every-day difficulties arising in the operation of the Banner knitting machine. In previous installments he has covered the subjects of setting up and adjusting various parts, etc., as well as the care of needles. Clipped copies of previous installments will be sent to those request ing them.

The Editor cordially invites all readers to discuss any point covered in this series, with the idea of presenting different methods and views on these subjects. Address your letters to the "Knitting Kinks" department of COTTON.

EDITOR COTTON:

I will now begin a discussion of operating difficulties encountered in the operation of Banner knitting machines, and will first take up

Heel and Toe Defects.

Holes in the heel and toe can be caused by so many unusual things that would be hard to enumerate, that no attempt will be made to list them all.

When setting the sinkers they should come in just fast enough so that the point of the sinker does not get under the yarn as the needles are going down, and in far enough to cast off the stitch as the needles come up before the needle hook protrudes through the fabric. When sinkers cast off the first stitch satisfactorily, but not the last stitch, thus making a drop, it indicates that the side cam is not adjusted to conform with the sinker cap, or vice versa. A good adjustment for the knocking-over cams is 3/16-inch from the inside of the sinker cap, but after they have become worn, or nicks have been polished off, it is often necessary to set them 7/32 of an inch. The sinker cap must work freely, and all sinkers should be free from lint or dirt, as a stiffly working cap causes ruffles on the inside of the fabric.

On diagonal and Jacquard sinker caps, a broken sinker butt not only causes tightness of the cap, but often breaks every sinker in the cylinder head. Every precaution must be taken to have both regular and plaiting sinker cams properly adjusted and free from nicks.

Knitting with the needles too low, will pull the yarn down too far and hard on the sinkers, causing excessive strain, which often breaks the yarn. Low needles also offer yarn a chance to work over the top of the needles, causing holes, and increases the opportunity for latches to open, should the carrier ring be too high so that the latch openers will not perform their duty. The obvious remedy is to adjust the needles and set the carrier ring. When a carrier ring works high, or gets high through adjustments, it allows a finger that may be set low to strike the needles on the heel and toe. On a new job I was introduced to a machine occasionally making drop stitches in the looper round. After several attempts at adjusting, I made a study of looper rounds and found that the drop was caused by the cams on drum 17 being separated just far enough to allow one finger to drop low enough to strike the first long butt needle occasionally as the machine was snapping off the toe. The cause of that defect did not happen the day I fixed it, and is an incident showing that a fixer must work with both head and hands or make trouble for himself or his successor. When resetting a finger it should be tested for both the heel and toe, as it often happens that there is a slight variation in the cams and the adjust ment will not be the same on both operating points.

Using a long finger will allow a latch to get behind the yarn and close, thus pushing the yarn out from several needles in the act of closing, which causes a loop. On machines which have had the stripes attached, I have found several set up to use the last finger for the heel and toe yarn. Naturally, it makes the striping splice shorter, but these machines usually developed looping in heel and toe due to feeding yarn to needles too far from the finger on the reciprocating motion.

Too much tension should not be used on the yarn, and the take-up spring should be just strong enough to take up the slack as the cylinder reciprocates. Excessive tension will cause cuts and an insufficient spring on the take-up will cause looping, so the happy medium will give the best results. Parts often become worn, which will cause the pull-down wire 100 not to be raised high enough. Then when all the needles have been raised preparatory to pull-down pickers going into action, the take wire 80 will strike the wire 100 allowing the yarn to drag and cause loops. Using 7 and 7 links on a 3 3-4 inch 150-needle machine does not leave many needles down. This can be remedied by resetting the wires and polishing smoothly both the binder 710 and block 156. Quite often the knitter removes the binder, pulls yarn over or under it, or allows lint to collect at various points with troublesome results.

When using bent back needles, excessive bending allows the yarn to miss these needles. but this can be remedied by a little extra tension on the needles.

Side cams and stitch cams that are not properly gauged, cause uneven fabric, and quite often the so-called "cam-cuts." By drawing a finger over the yarn, thus making it tighter on one side as the machine is reciprocating is a good way to find which side cam is tight or loose, when the faulty one can be adjusted. Quite often the point of stitch cam below the concaved portion is broken off, which causes a "washboard" fabric or cuts. This should be reground or replaced with a new one to insure an even stitch. A rough spot on the binder or inside of the cam often cuts holes that are troublesome to discover. A small size binder plate on a large size machine or a plate that has been ground at places causes trouble. A machine was cutting a hole in one side of the heel on a striper half-hose machine, just as clean a cut as though made with scissors, and would happen only a couple of times a week. When it happened, the yarn was changing and the heel fabric would ride over the top of the binder plate, under the knife, and a cut, five or six needles in width, was the result. This was remedied by a new binder plate that was not ground off at the back.

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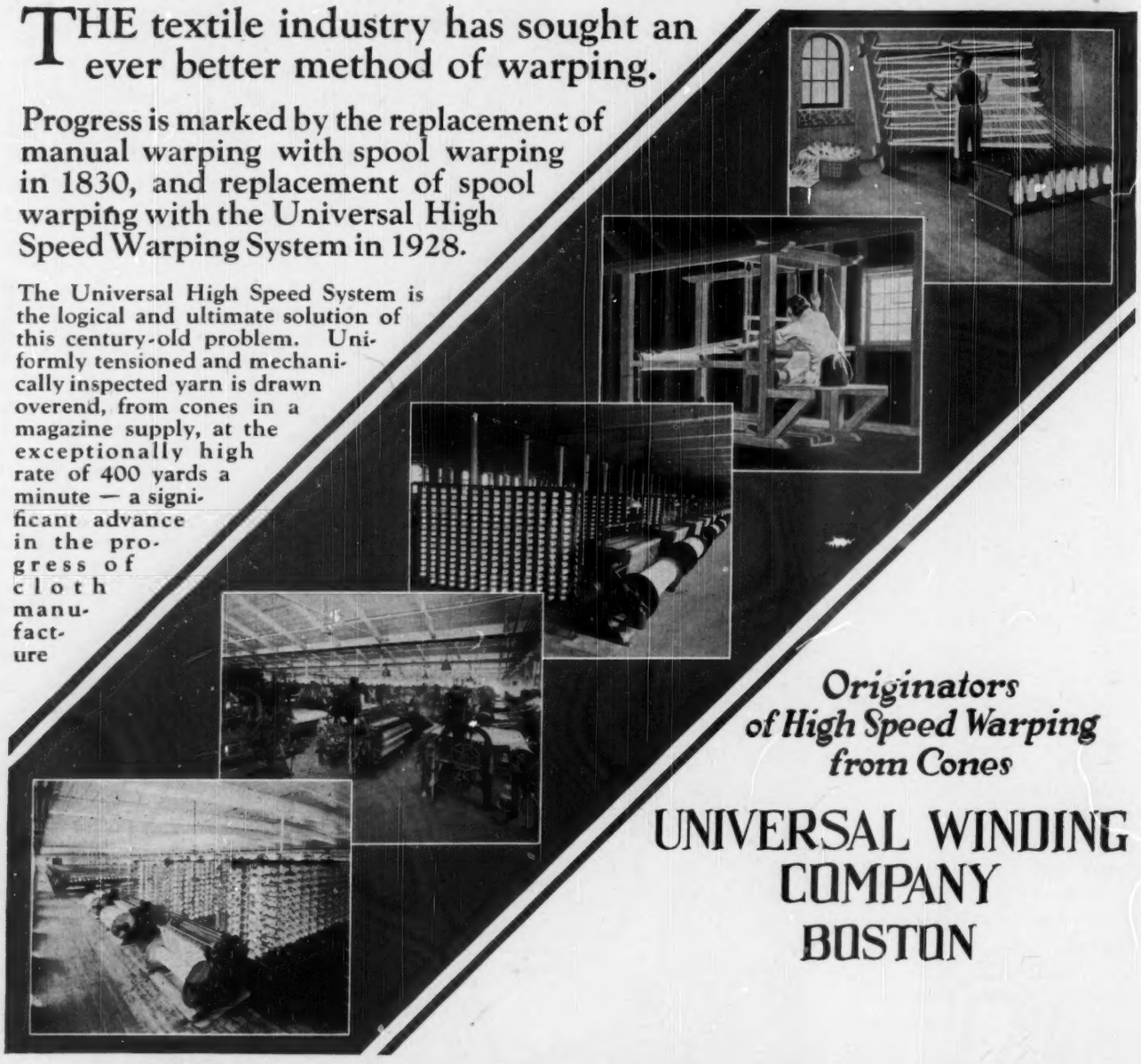

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Good judgment when making adjustments, will help immensely to eliminate waste. It is not strict economy to use yarn in making the boot and then have the stocking made into a second by a bum heel or toe.

Uneven Stockings.

Hosiery with tight or loose bands around it or tight and loose streaks up and down are not too pleasing to the eye. Unequal strands of silk, uneven winding tension, improper degumming in the dyehouse and varying moisture content must take their share of the blame, but many mechanical defects cause these same irregularities. A wobbly sinker cap will exert pressure on the sinkers at various parts and the cap holders 493 should be adjusted so the cap will fit as

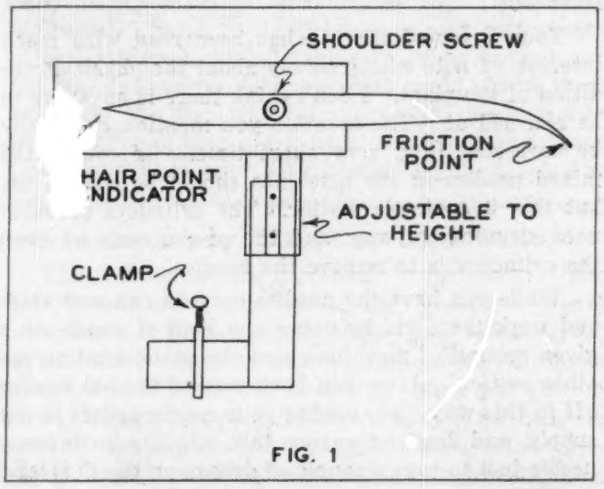


FIG. 1

sungly as possible without unnecessary wear. Lint is bound to collect in the sinker head and keep the sinkers from working freely. If there is lint in some sinkers and none in others, the sinkers having the dirt will not work in as far as others or become tilted, causing tight and loose streaks. It is the best plan to strip the sinkers from the head and remove all dirt from every slot.

Quite often after a smash, the sinker head is raised or lowered at some places. The sinkers should be removed and the head adjusted so that the sinkers seat firmly on both the sinker head and stitch ring 61 and not above one when resting on the other. When sinkers are not seated properly the sinker cap or side sinker cam will tilt them as the stitch is formed, causing tight and loose streaks. A wobbly cylinder will allow the needles to draw an uneven length stitch. The cylinder should seat firmly on ring gear 12 with a tolerance of only a few thousandths of an inch. The bottom of the cylinder can be refaced if needed and all burrs or spots on the ring gear should be removed. When ring gear or circular base 3 becomes worn, a satisfactory method often employed to overcome the wobble is to place a small cam on the circular base which will exert friction on the ring gear. To true a sinker head or cylinder, the gauge shown in Fig. 1 can easily be made and gives satisfactory results.

When the slackening cam 426 is used, if it is not set properly, the short butt needles will draw a loose stitch throughout the stocking, making a tight front and loose back. The machine going out of time will cause the cam to go into action early or late, causing tight and loose spots. This cam should go into action on the same move as drops in the splicing yarn and should work freely.

If the fashion cam 85 is uneven it will cause tight and loose rings around the stocking as the fashion plunger 165 moves to each new resting place. This cam should be smooth and if necessary the fashion wheel 16 can be taken off and fashion cam turned down to conform with wheel, then the proper adjustment can be secured by using screws in fashion cam. A fashion link that is not the right height, thus giving the drum two kicks instead of one will cause a noticeable tight ring in the stocking. If the sliding bar 168 sticks and does not allow the cam plate 55 to be raised or lowered freely, it will cause trouble by making rings or entire tight and loose stockings. Have the cam plate free to move and oil the sliding bar at the caps 168 occasionally.

A loose cam block 51 allows the needle to draw an uneven stitch most noticeably when the first long butt needles go through the cam blocks. The remedy is to tighten the cam block clamps, adjust the stitch cams if necessary and be sure that the needles have enough clearance between the stitch cams and the center cam for easy passage. If you pull out the cam block and a few needles come with it, then they have not sufficient allowance. A tight or loose needle makes streaks and when the cylinder bands 8016 become worn or loose they allow the needles, not having the proper tension, to get out of line, causing trouble and various defects.

When making a sheer fabric, it is advisable not to stop and start the machine oftener than necessary while making the silken part, as the sudden jolt at starting invariably causes a loose course at this point. When machines are left idle for any length of time in the silken part a band is caused due to the heat of cylinder drying the silk at that part of the stocking.

BANNERMAN.

[This is the fifth of a series of articles on this subject. The next will appear in an early issue.—The Editor.]

One-Bath and Two-Bath Hosiery Dyeing.

(*Continued from page* 957.)

It would seem to me that some laboratory or sample machine runs on seconds, using this method, would prove of interest to those dyers who have never tried this type of silk dyeing. Should any readers do so, the findings will certainly be of interest to others of us who read COTTON.

In conclusion: In none of these methods will the dyer be able to accept just any dyestuff formula as sent him from a laboratory. He will have to correct the amounts of the various colors constantly until he has what is generally called a "standardized formula," and even then little changes in temperature, time, water, and even in the goods, will throw his shades far enough off the sample to call for special efforts. This is especially true if the One-Bath Method or the Acid Method is used. Both these require considerable experience. However, when all is said and done, it will take experience and patience with any method, to handle the goods properly.

Under this heading from month to month we shall publish letters similar to those found below. The Son has been working for Dad, and has just gone to another town to become superintendent of the knitting mill there. Each month he will write to his Dad, telling him of some of his problems, and the old gentleman will reply, giving the boy the further benefit of his experience.

These letters from Dad are being written by a prominent mill man, who wishes to remain anonymous. His comments and advice are based upon an extended practical experience in knitting, and from time to time he will discuss such phases of knitting manufacture and personnel problems as his Son may put up to him. . . The Editor.

DEAR FATHER:

I have been here just two weeks today, and the time has seemed much longer than that since I left home. Everything is so different here at the plant from what I have been accustomed to, that I hardly know where to begin.

The physical condition of the plant is far below par and shows the effects of gross mis-management. You should see some of the patch-work on some of the machines done by jack-leg fixers. We have no tools to speak of, not even a power drill press. The old emery wheel looks like it might have been in Noah's Ark. There are two or three kinds of needles in the machines, and the stitch cams are worn out.

I noticed it was impossible to get good sizing on the machines, and checked up on the pattern chains and to my astonishment I found that no two of the chains had the same number of links in them. There are many other things just as bad which I will not take time to mention. I will say, however, the outlook is very discouraging, and I realize it is going to be a hard, long pull if I ever put this plant on its feet. If I was back home I would stay there!

I am stopping at the hotel and I have enjoyed the evenings with some of the traveling men and have played a few games of set-back and attended some good shows for recreation. If it wasn't for this diversion I would have a good case of homesickness. Give all the boys my best regards, and tell them to write to me.

With love to all the family, I am

YOUR AFFECTIONATE SON.

DEAR SON:

Your letter of the 8th has been read with much interest. I note what you say about the physical condition of the plant. I don't think there is anything to be alarmed at. The troubles you mention can easily be corrected in a very short time. Of course the mixed needles in the machines should be cleared up, but this is a simple matter. The cylinders probably need cleaning anyway, and the proper way to clean the cylinders is to remove the needles.

While you have the needles out you can sort them and work them off by using one kind of needle on a given section of machines, and the other kind on another section. After you have worked the old needles off in this way, then confine your needle orders to one supply, and don't let anyone talk you into an inferior needle just to save a couple of dollars on the thousand.

With regard to the variation in the pattern chains, this is a thing that will happen in the best regulated mills. It is brought about by carelessness of the fixers in changing sizes, and an occasional breaking of a chain. You will be surprised to know that when I got your letter mentioning this thing, I went to the knitting room and checked up on *your* old section of machines and found eight out of the fifty machines varying from one to three links in the pattern chain. I took this as a leader to have all the chains in the mill checked up.

This leads me to believe that a part of your troubles are imaginary. Such little discrepancies as those you mention can easily be corrected.

Your criticism of the patch-work on the machines done by a jack-leg fixer is hardly fair, since you mention the lack of tools and equipment to do repair work. I suggest that you take off one of the worst-looking patches you can find and take the same material and tools and do the job over yourself and see how much better it looks when you have finished with it. To push a breast drill for a few minutes will develop your muscles and to ream out the rivet-holes with a larger drill will test your temper and give you some of the necessary diversion to which you referred. It will also give you a more correct appraisal of the ability of the jack-leg fixer. As a matter of fact, such patch-work is time wasted and should never be done except in a case of emergency to keep a machine running until a new part can be secured. Patch-work is not a test of a fixer's ability. A complete stock of

new supply parts is the best solution to this problem. The better test of a fixer is the kind of fabrics his machines are producing, and his waste and seconds reports.

I note that you are still staying at the hotel and find recreation in an occasional game of cards or a show. While there is diversion in these things, there is much waste of time. *If you should become the most skilled set-back player in your city you would not have acquired enough information by this accomplishment to handle successfully the smallest job in connection with your business.* I would seek recreation in those things that contribute to the development of your mind and body and which prepare you to perform more efficiently the duties connected with your chosen profession. Read the textile papers and keep posted on the improved methods that are being worked out. The textile business is moving with rapid strides these days, and the man who fails to fortify himself with knowledge will soon be a back number. Knowledge builds confidence, and confidence dispels the blues. The blues is a disease of the mind and a product of fear. Fear is a lack of confidence. Now, in order to get rid of your blues, solve the problems that you have in hand and there will be no question in my mind about the long, hard pull you speak of in putting your plant on its feet.

I would strongly recommend that you secure room and board in a quiet private home where you can keep up your studies and leave off the cards and shows.

While we miss you at home I am happy that you have taken this job. I assure you that I have no blues for I have confidence in you and no fear that I shall be disappointed.

With love and best wishes for your success, I remain.

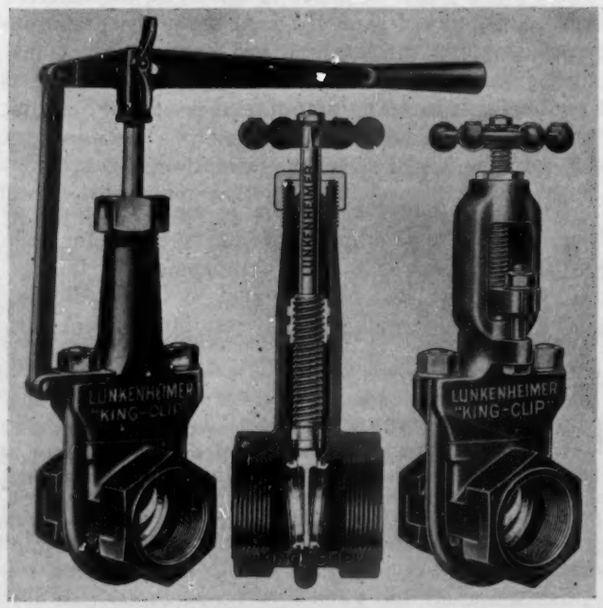
YOUR SAME OLD DAD.

How did you like these letters? If you would like to read them regularly each month, won't you drop us a line saying so, in order that we may pass your comments along to the man who is writing them? Thank you.—Editor COTTON.

Lunkenheimer "King-Clip" Gate Valve.

The Lunkenheimer Company, Cincinnati, Ohio, have announced a new valve, the "King-Clip" gate valve, made in three designs: rising stem inside screw, outside screw and yoke and quick operating; all types being made in iron body bronze mounted and all-iron patterns, with screw or flange ends. The body is made of iron especially alloyed for valve service. The thread length accommodates both American Standard and A. P. I. line pipe. Flange end valves have flanges of the 125-pound American Standard for iron flanges and are plain faced.

The steel clip provides a simple and effective method of securing the connection between the body and



bonnet, and facilitates dismantling the valve for cleaning or inspection, as well as lending strength and rigidity to the body, the company points out.

The bronze bushing in the bonnet in the inside screw and quick operating iron body bronze mounted valves is an exclusive Lunkenheimer feature, it is explained, this providing a non-corrosive contact with the bronze stem, protecting the stem threads and insuring easy operation. The outside screw and yoke valves, both iron body bronze mounted and all-iron, have bronze bushings in the top of the yoke.

It is further pointed out that the stem has rugged-wear-resisting thread of generous length, being always in full contact with the thread in the bonnet, with valve open or closed. The shoulder above the stem thread forms a tight contact with the seat under the stuffing box, permitting repacking the valve under pressure when wide open. The disc is sharply tapered, for making the valve adaptable for handling heavily impregnated fluids. The disc-stem connection in the iron body bronze mounted valves is in the form of a horse-shoe band.

The seat rings are permanently rolled in. The handwheel is held on the stem by a brass locknut.

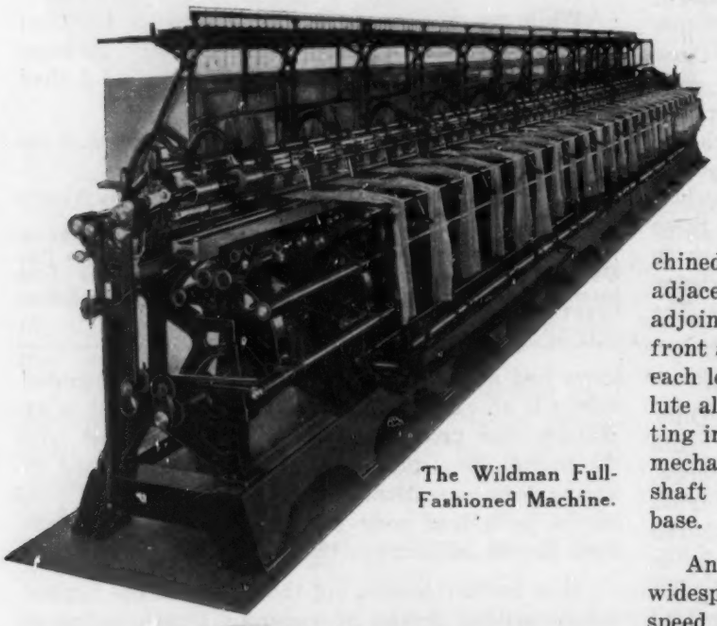
The iron body bronze mounted valves, and inside screw patterns, have iron body and bonnet, bronze bonnet bushing, disc, seat rings, stem, stuffing box nut and gland; steel clip. The quick operating sliding stem patterns are of similar construction to the inside screw patterns, except that the handwheel is replaced by an iron lever attachment permitting practically instantaneous valve operation. The outside screw and yoke valves have iron body, yoke and gland; bronze yoke bushing, disc, seat rings and stem; and steel clip.

In the all-iron patterns, all parts except the bronze yoke bushing in the outside screw and yoke valves, are made of ferrous metals. Pressure ratings for these valves are: screw ends, ¼ to ½ inch inclusive, 150 pounds working steam pressure, 225 pounds gas or liquid pressure. Screw ends, 2½ to 4 inch inclusive, and flange ends, 1½ inch to 4 inch inclusive, 125 pounds working steam pressure, 175 pounds gas or liquid pressure.

The Wildman Full-Fashioned Machine

THE Wildman Manufacturing Co., Norristown, Pa., which acquired the Ritcher Machine Co., makers of the American Richter full-fashioned hosiery machine, are producing the re-designed Richter machine in their new plant at Norristown. A separate division of the company has been organized for the purpose of operating this enterprise, and is personally directed by the executive personnel of the circular machine factory whose ingenuity and experience in the manufacture of knitting machinery is being applied to the new product.

The manufacturers point out that in presenting this re-designed machine. they have in mind supplying equipment rigid and solid in construction to eliminate vibration, as well as a machine which operates as an individual mechanical unit, one requiring a minimum of physical exertion and producing the desired quality of fabric.



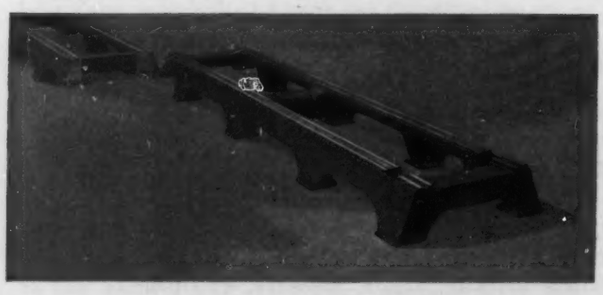
The Wildman Full-Fashioned Machine.

There are many novel designs incorporated in the machine and explained by the manufacturers, the most notable being the solid base construction. A machine for legging, consisting of 24 knitting sections, is mounted on this iron base, made up of four long sections, the pedestals and tops of which are machined. The ends are also machined, thus enabling the adjacent base member to be bolted and doweled to its adjoining section. The base is so designed that the front and rear pedestals of the base are directly below each leg section. It is explained that this insures absolute alignment of all shafts, head rails, tables and knitting implement heads and bars. All the principal heavy mechanical operating members including a countershaft carrying the fly wheels are mounted on this base.

Another prominent feature which has attracted widespread attention is the use of an automatic slow speed attachment instead of hand wheels. The attachment permits any necessary forward or reverse movement to be made at a very reduced speed by a slight movement of a control lever; one of which is located at every two knitting heads. Supplementary to this driving mechanism is an electro-magnetic brake, which stops the machine whenever any current is shut off. Also, should a fuse blow, the brake engages, stopping the machine and preventing the machine from turning backward and breaking the knitting implements. The manufacturers point out that the ease of operation has in numerous instances resulted in the use of females as operators.

The catch bar construction is made sectional so that an individual adjustment can be made for each knitting section. This same arrangement of individual control has also been applied to the needle bar yoke which makes each needle bar an independent unit.

The New Slow-Motion Mechanism.



The Base of the Machine.

EMMETH TEXTILES, INC., Philadelphia, men's and women's full-fashioned silk hosiery, is removing to larger quarters in that city, occupying 50,000 square feet of floor space and, it is stated by Marc Sternberg, president of the company, 46 new machines of 42, 45 and 48 gauge will be installed as an addition to present equipment.

BROOKS & ANDERSON, INC., operating a small full-fashioned mill in Philadelphia day and night, is installing five additional 42-gauge machines. Present production is chiffons.

The Knit Goods Market

PRIMARY market hosiery interests looked for happenings following the announcement of the Berkshire Knitting Mills, of slight downward price revisions for deliveries July to December. While the announcement failed to shake values at the smaller mills, they seemed to have the effect of causing some of the "little fellows" to make a special drive for the business of large retailers. This encouraged buyers to believe their lower offers would be accepted, and in instances they were. But whatever damage to values the sharpshooters among quantity buyers were looking for was, apparently, checked when, early in May, the Apex Hosiery Co. came out with a new price list which, it was explained, simply met the Berkshire cut.

A PROPOSAL for a merger of several full fashioned silk hosiery mills with two silk throwsters was being seriously discussed in and around Philadelphia two or three weeks ago. It is reliably reported that such mills as the Apex in Philadelphia were approached and that the Berkshire Knitting Mills had been indicated by the promoter of the project to head the merger. The only small mill mentioned in connection with the report is in Allentown, Pa., and the silk throwing plants connected with the rumor are in that vicinity. The leading spirit in the quiet movement for the most powerful merger of hosiery interests yet seriously undertaken is a New York silk importer. While it would be possible to mention names authoritatively, to do so would bring emphatic declaration of no knowledge of the project, as all of the concerns to which it has been submitted—with what result cannot be definitely stated—have been instructed to make positive denial of the rumor.

The two manufacturers of full-fashioned hosiery who are rated the pivotal factors in establishing prices for a turn in the seasons, had gone through with that formality in a way to cause little if any general disturbance of the markets, although at the time there was evidence of a slower trading. Interests seeking to bear the markets made much of the indicated confusion in Congress and in financial and mercantile quarters incident to factional strife over customs duties and proposed farm relief measures. But even this played no part of moment in unsettling prices of hosiery, while it doubtless did operate to check the flow of orders momentarily. But from early April until well into May there had been, in the East, five consecutive weeks of adverse weather conditions, which gave buyers their better opportunity for attacking prices. In the circumstances, all things considered, the hosiery markets entered the first Summer month apparently keyed up for a steadily brisk season.

Prices for silk hosiery are a shade lower than during the phenomenal activity of last Fall. That the declines have been only moderate may be ascribed to the upward trend in raw silk. Any further reductions, it would appear, will have to be provided for in economies in production or acceptance of less than the current narrow margin of profit. Some of the northern mills may be expected to shortly put their operating cost more nearly on a level with that of, at present, more favorably situated competitors.

Whether primary market prices for full-fashioned silk stockings shall be maintained may depend on the extent to which mills balance production with consumptive demand. This is easier talked about than accomplished, as it appears to be the aim to meet competition with mass production and overtime operation of plants. These processes are doubtless the cause of a near glut in low price fullfashioned. It is noted, however, that, despite presumably fairly larger accumulations of 39-gauge and 42-gauge hose, the dollar price is less conspicuous in leading shopping centers than a half year ago. This may be attributable to a resolve by individual retailers to discontinue suicidal price cutting and sell for a profit. So soon as reductions by two large mills were announced in recent weeks and followed in a quiet way by others, buyers were heard to say, "the revisions are so slight that they cannot be passed to the consuming public. The stores now have a chance to improve on their profits." All of which has a cheerful ring for retailers giving too much importance to the statements of elements which ordinariy do not shout as they act.

Increasing Consumption to Absorb Larger Output of Silk Stockings

TEMPORARILY there is an unnecessarily liberal supply of ready-to-ship hosiery in the gray. That much of it will go into distribution without material delay seems a foregone conclusion, and large retailers are not going to long keep it in stock. Their special sales provide an outlet through which the excess is quickly disposed of. In fact, a very large part of the consuming public waits for the "sales" and fills the wardrobe with stockings bought for less than their intrinsic value and, therefore, cheap in the application of the term to price and not to quality.

A Philadelphia shoe shop patronized by a good average shopping element pays $12 a dozen for all-over silk hose that it sells for a dollar a pair. The management remarked on one occasion, "We could afford to sell hosiery at actual cost, when we consider the number of customers it draws to the store who otherwise would buy their shoes elsewhere." A ready-to-wear shop not a business block distant has, by admission of the merchandise head, a profit of less than $2 on stockings which it sells for a dollar, but as in

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the case of the shoe shop, the dollar a pair full-fashioned are simply a leader and other lines are priced for an adequate but not exorbitant margin. Thus low price stockings are swelling the sales of moderately priced staples all along the line, and consumption increases in proportion, to some extent, with production augmented primarily for meeting the increasingly keen competition.

Use Bemberg as a Leader in Promoting Sales of Silk Hose

AS if in efforts to support prices for full-fashioned pure thread silk hosiery, some department stores are using Bemberg full-fashioned for a leader. The unusual spectacle was presented a few weeks ago of one large establishment featuring Bemberg first quality at 88 cents a pair while not a business block distant another was making a hue and cry over irregulars priced 89 cents—second grade selling in this store for a cent a pair more than firsts in the other, where it was stated sales were very large while the markdown price continued. A few days later the store getting 89 cents for irregulars came out with a big line of first quality for 85 cents a pair—the lowest price at which Bemberg full fashioned ever had been sold in Philadelphia.

What quantity buyers are paying for Bemberg full-fashioned is not disclosed, but it was stated by one that at 90 cents it shows a fair profit, on the basis of volume. It gives retailers opportunity for detracting from consumer interest in dollar silks. Some affect to believe the low prices mentioned will have the effect of discrediting Bemberg as a dollar full-fashioned. In the absence of definite information from producers, it does appear as if Bemberg full-fashioned has had its peak and is receding. This is denied by at least two well known manufacturers selling to jobbers and by one extensive wholesale distributor. That it is being assailed by unorganized interests hardly can be questioned.

The Gold Seal Knitting Mills, in Reading, Pa., recently put on the market seamless knit Bemberg hose, to go over the counter for a half dollar a pair. The mill sells the line direct to the retail trade and reports it receiving good support. The line is made on spring needle machines, which in large extent appear obsolete in thread silk hosiery production. It is viewed as providing equal value with much of the dollar full-fashioned pure thread silk and, considering the prestige attained for Bemberg during a two years run in the full-fashioned division, the half dollar spring needle stocking is regarded as having a better than even chance as a competitor of other types of rayon knitted on latch needle equipment.

The other extreme in Bemberg stockings is seen in a full fashioned mesh line, priced $1.95 a pair. It comes from Saxony and is reported making a strong appeal among shoppers favorably disposed toward the fishnet construction, in both plain and diamond self patterns. Some factors regard circular knit mesh stockings as promising of acceptability as among a contingent banking on use of the very sheer for simulating bare legs, of which less is heard with the nearer approach of summer. From careful observation it appears that manufacturers' reports of their large sales of 300 needle three-thread with no back seam and minus heel reinforcement are not supported by the number of wearers encountered in public places. At the moment it appears that the fad, if it advances from the incubation stage, will resolve itself into one of bare legs and anklets and that otherwise the sales of regulation sheer hose will be little affected. With no heel reinforcement, the three-thread fine gauge would be readily distinguished from nude limbs, and without it, the stockings give so little service that the one element to which it was supposed to appeal cannot afford the luxury of appearing in what it is not. This, at any rate, is the line of reasoning of disinterested factors discussing the propaganda for sunburn as a badge of ultra fashion.

Many manufacturers of circular knit silk stockings are encouraged by results from exploitation of latch needle bare leg hose to believe the seamless industry can be revitalized if it concentrate on pure thread silk high quality hose. Among those in the North in whom this belief has germinated there is less use of rayon, except for plaiting on silk. In the first place, it is stated, they cannot compete with southern mills in the manufacture of straight rayon hose, but that they can sell pure silk and rayon and silk in combination has been proved this year in the fact the better established mills are shipping out capacity production and seldom have output abreast with orders.

It may be significant that the mill of the Weinerth Knitting and Machine Co., in Reading, has a record for continuous operation that is not matched by any in that city. The work schedule is 24 hours, seven day weeks, with no cessation for meals. The only time the plant was idle this year was Easter Sunday, operations being continued through all other Sundays. According to present outlook, the management states, there will be no suspension of production for some months, excepting for Memorial Day and Fourth of July. So far as known, no other seamless mill is so hard pressed for deliveries. Its product comprises silk and silk-rayon hose of the better grades and a modicum of straight rayon, for the trade that requires a price stocking of silk appearance. One mill in Reading is knitting straight rayon exclusively and maintains day and night time schedule. It also is an exception.

Novelty Heel Hosiery Between Conflicting Opinions

BUYERS profess to be skeptical of novelty heel construction for women's hose notwithstanding several suits involving alleged infringement of patents under which they are being bitterly fought in the courts. Some will not put them in stock. Some of those who carry them say they look for them to pass out of the picture as suddenly as did the black heels last year after a strong run. On the other hand, the Apex mill in Philadelphia states it will bring out a line of two-point heel for the Fall season. Prices for several mill numbers have been revised downward in the last few weeks. A 42-gauge seven-thread single point heel, made under license, was offered quite recently for $10 a dozen and a 39-gauge eight thread

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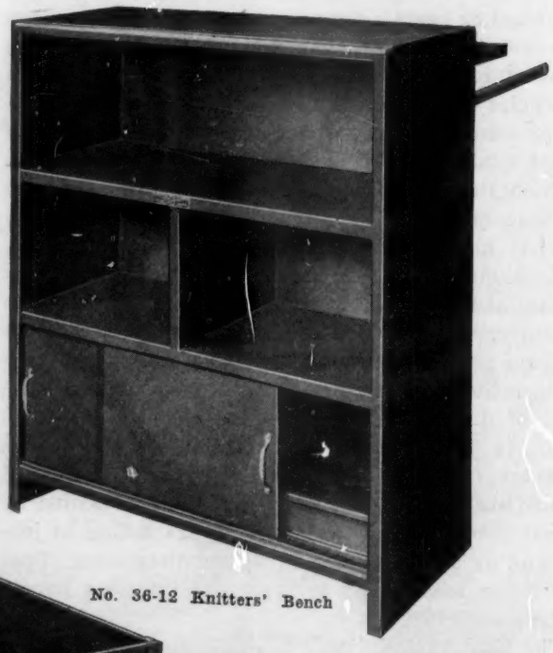
NO. 36-12 KNITTERS' BENCH

Size: 36 in. wide x 13½ in. deep x 42 in. high overall. Built of high grade smooth black sheet steel throughout, finished in a durable, rich olive-green lacquer. TOP: May be had of black sheet steel finished green, or monel metal left in natural polished finish. Top has inset yard stick at front. Built with extreme care throughout to assure all edges, seams and corners smooth. Bottom compartment enclosed with double sliding doors. Water-tight pan with perforated cover furnished with each bench. Size of water pan: full width and depth of compartment by 3 in. high.



No. 36-12 Knitters' Bench

No. 27-17-16 Knitters' Steel Boxes

NO. 27-17-16 KNITTERS' STEEL BOXES

Size: 27 in. long x 17 in. wide x 16 in. deep, inside measure of box proper. Box part of 20-gauge, high-grade extra-smooth black sheet-steel. Overall height, including legs, 22 in. Top edges of box are rolled and all corners hemmed so that absolutely no sharp edges or seams are in the box or at the top. Also, special care is given to outside of box for smoothness so that silk or other knit goods will not be ruined. Spot- and acetylene-welded construction. Finished throughout in durable, rich olive-green lacquer.

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New York City—Angle Steel Stool Sales Co., 98 Park Place.
Springfield, Mass.—W. M. Lyman, 43 Dunmoreland St.
Boston, Mass.—John E. Williams, 470 Atlantic St.
Milwaukee, Wisc.—Northwestern Furniture Co., 271 W. Water St.
Chicago—Lathrop Angle Steel Equipt. Co. 325 W. Madison St.

for something less. Four and five-thread plain chiffons with pointed heel came out about the same time at $10.25, a drop of 25 cents a dozen. These declines were not so striking, however, as an offering of 54-gauge four-thread solid silk, with picot top, for $11.50, which is a dollar less than the regular price of one mill line of 45-gauge four thread. Another offering was at $11 a dozen. Neither is representative of market values, the prices in both cases being quoted for overruns or so-called discontinued numbers, say manufacturers. According to buyers, there are so many offerings of overruns that to wait for them has become chronic. Seven-thread 39-gauge has taken a drop that is not chargeable to overruns. A line of silk to narrow hem was offered to a large retail establishment for $8.25 a dozen, for the dollar a pair price bracket, and it is stated by another concern that even lower figures have been quoted on quantity lots.

There are reports of some few orders for women's full-fashioned silk being placed in May for July delivery. As at least two mills had named prices applying to the last half of the year, average large jobbers probably did some early contracting for types of staples in which production hardly has been carried to the extreme, and June should witness quite a flow of business to leading mills distributing through wholesalers. Direct-to-retail manufacturers have had an increase over their March sales, and these producers are, as a class, well supplied with small immediate delivery orders. One of the larger in this group has, however, reshaped its line, so that, while not actually reducing prices materially on any of its numbers, it is offering new numbers at lower figures relatively, which is one way of escaping the accusation of competitors that it has "cut prices."

Men's Fancy Half-Hose Reasonably Active After Quiet Spell

JOBBERS were neglecting the fancy half-hose market for a greater part of April and in early May, until it appeared to numbers of northern manufacturers that novelties were being sidetracked entirely. As developed when they began to prod buyers, style changes were at the bottom of the near slump. Some few mills were bringing out new patterns about every three weeks and calling in slow selling numbers. With each change in design, it seemed the trend was more and more toward the ultra conservative. Repeat orders for any one pattern became a thing of the past. And as jobbers usually buy for only a few weeks' needs, if their favorite mill does not have a new style they go to another—anything for variety. So, to hold its trade, a mill is virtually forced to keep new numbers coming through at short intervals. Buyers necessarily wait for the latest offerings, and when nothing particularly striking comes out they may take leftovers of earlier models—but always at a discount. The new and fetching commands prices satisfactory to sellers. Complaint is heard that there is no volume business on any one model.

Some recent innovations from which mills have had good results are made in but two colors, one for narrow vertical stripes and one for the body of the stocking. Among the better selling combinations were tan and cordovan and cordovan and gold. In the ten numbers of one mill were two with both vertical and horizontal stripes, three colors being used in these models. For a time a few weeks ago, some mills report, plain colors were being more generally selected by retailers. Latterly the call ran to two tone effect, with clocking for the higher price brackets. As to fancies, the 25 cent group appears to have the right of way. Next in point of volume is the half dollar sock in light weight fabric. A mill selling the retail trade and making no quarter dollar socks has ten numbers in each the 50 and 75 cent and dollar lines.

Production of men's half hose appears pretty evenly divided as between silk-rayon mixture and rayon-cotton combination, the former having a slight lead in number of dozens. Output of rayon half-hose shows little fluctuation from month to month, but it appears to have made some gains over the first few months of last year.

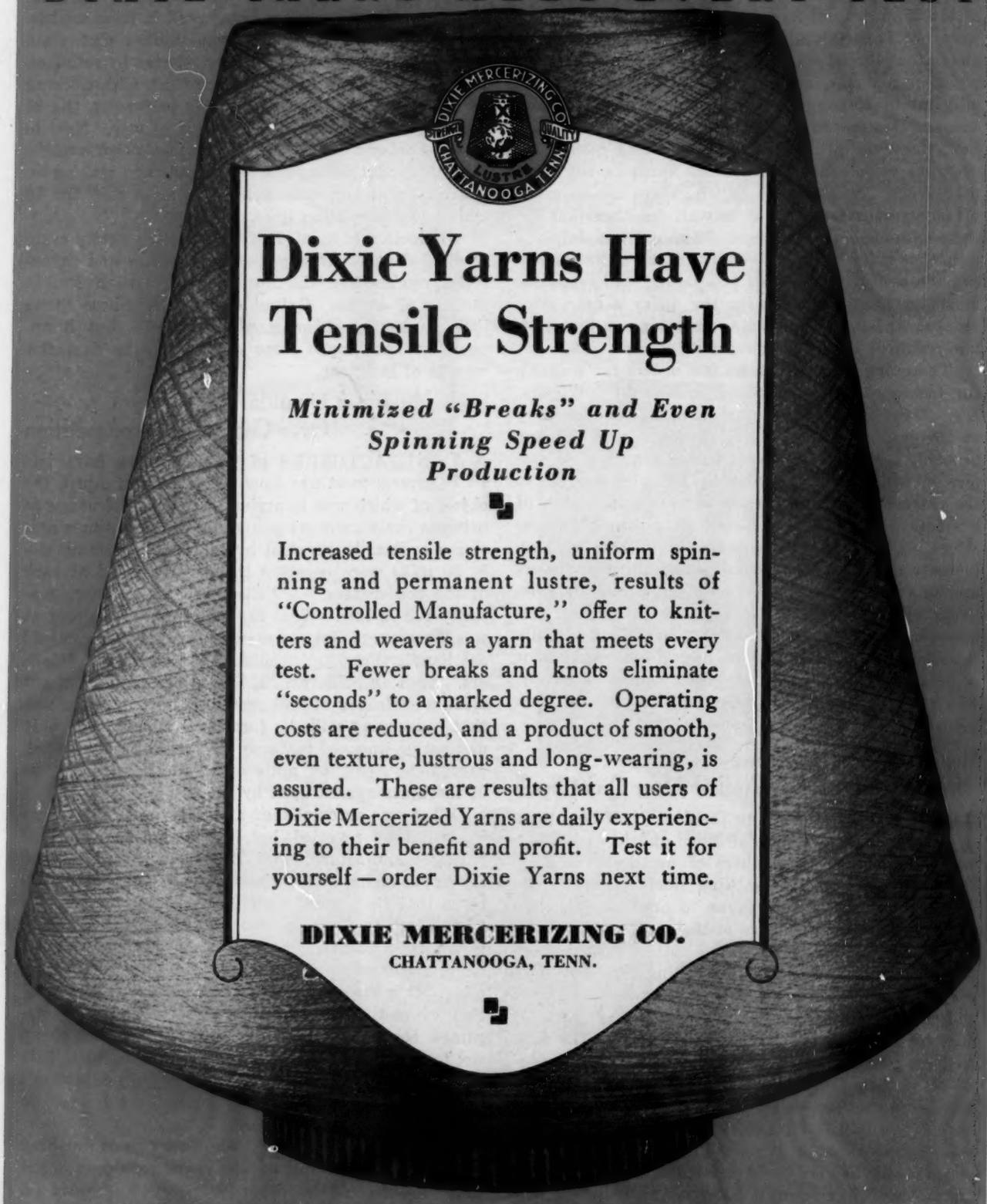
Sock Mills in a Quandary Over Chain Store Competition

MANUFACTURERS of infants' socks have had several meetings since the middle of April, the object of which was to arrive at a line of cleavage as between chain store goods and lines for the single unit stores ordinarily supplied by jobbers. Approximately 20 mills were expected to be represented at each of the conferences. A little more than a mere majority fell in line. What the manufacturers aimed at was a variety of lines so priced that chain stores could not handle them, yet profitable to jobbers and retailers. Such an achievement, it was pointed out, might mean a shrinking of mill profits. One suggestion was that a group of mills be formed to manufacture only distinctive lines, of patterns that could be duplicated, presumably, only by mills using the particular type of machines agreed upon by the group.

What was accomplished at the several conferences has not been revealed, but it is stated by a participating manufacturer that the difficulty experienced lay in producing socks so attractive in fabric and patterns that they would command prices ranging from 25 to 50 cents a pair, priced low enough to jobbers to give them a price appeal and yet beyond the reach of chain stores in which the prevailing price is 10 cents a leg. It is stated discussions hinged around installation of costly special machinery which, it was assumed, could not be used profitably in knitting cheap sox for chain store organizations, some of which, it is held, buy more socks in a single order for one season's business than the average big jobber buys for two to three seasons.

One of the sock makers, who just now is finishing the best season he has had in years, expresses doubt that jobber could be depended upon to improve on their buying policy. Ordinarily they do little buying inside of eight weeks after lines are opened, numbers placing no orders until late fall, notwithstanding samples are shown and prices named in July. Were they to repeat the methods of former years, this mill man maintained, manufacturers catering to the chains and making no secret of the fact, would "horn in" and get some of the business banked upon by the jobber group

DIXIE YARNS MEET EVERY TEST



Dixie Yarns Have Tensile Strength

Minimized "Breaks" and Even Spinning Speed Up Production

Increased tensile strength, uniform spinning and permanent lustre, results of "Controlled Manufacture," offer to knitters and weavers a yarn that meets every test. Fewer breaks and knots eliminate "seconds" to a marked degree. Operating costs are reduced, and a product of smooth, even texture, lustrous and long-wearing, is assured. These are results that all users of Dixie Mercerized Yarns are daily experiencing to their benefit and profit. Test it for yourself — order Dixie Yarns next time.

DIXIE MERCERIZING CO.
CHATTANOOGA, TENN.

DIXIE MERCERIZED YARNS

of mills. Their large sales to chain store organizations, it was pointed out, would serve to reduce their overhead cost on any line they might elect to exploit for jobbers exclusively, and enable them to undersell mills in the exclusively jobber group. He accords to them the same advantage enjoyed by wholesale distributors owning a mill or controlling the output.

Among jobbers in the position referred to by the sock manufacturer are Marshall Field & Co., with the Burlington Mill in Philadelphia; Ely & Walker Dry Goods Co., with the Philadelphia mill of the Lincoln Hosiery Corporation; Brown Durell & Co. and Carson Pirie Scott & Co. Any such jobbing corporation, it is held, can depend upon an outlet for the entire mill production, never has to close down for want of a market and is favored with a relatively low overhead. A jobber manufacturing infants' socks and protecting large retailers might provide the solution of the problem which a group of sock makers, chiefly Pennsylvanians, set out to solve, says one of their number who this year stood more in need of additional output than advice as to how to circumvent the chain stores.

Several of the sock mills have been weeks in arrears with deliveries. They have had to add equipment, operate overtime and bestir themselves generally for keeping jobbers satisfied with shipments. The socks have been one of the more active hosiery items, and more satisfactory than misses' sports hose, the latter being under the spell of the anklets. There are, however, some mills supplying boys' and misses' novelty hose that have been and probably will be for some time, as busy as in the heyday of the sportiest of sports seven-eighths length.

Shirts and Shorts Dominate in the Markets for Underwear

THE athletic version prevails in men's Summer underwear to an extent that a few seasons back could not have been contemplated, and seems to have enmeshed women's underthings for Summer wear. Next to men's knitted athletic shirts and woven things which if they were an inch or two shorter would have to be taken out of the drawers classification, demand runs to athletic union suits. There is business aplenty in such lines, but most manufacturers of knitted union suits and separate garments say business with them is quiet. The one time popular bals and ribs have for the time been relegated to a position far back in current demand. But in even the shirts and shorts there has been missing that activity which should have set in several months ago and been maintained. There were days when it was a safe assertion there was a lull. First hands blamed it on weather, jobbers being thus relieved from the charge of holding up business. But there was safety in the orders placed—delivery had to be made so promptly that there was no opportunity for cancellation.

The B. V. D. Co., formerly making only nainsook underwear for men, but now producing both the cut and sewn and the knitted, in almost every description applicable to underwear, recently launched what it says is the most powerful advertising campaign ever undertaken for underwear. It is using page displays in publications read by the masses, and its distributors

Laurel Soaps, Oils and Softeners

——and you can always depend on them —to be Uniform

as well as pure, because every step and process in this modern plant is governed by laboratory control.

Incoming raw materials are analyzed, checked and tested so that every batch may be unvaryingly uniform.

Processing is never rushed. Time, temperature and other requirements are met with exactitude that the finished product may be clean, pure and properly aged.

The facilities of this plant as well as nineteen years of experience in textile detergents, oils, softeners and special treatments are available to you.

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MANUFACTURING COMPANY
Incorporated
Wm. H. Bertolet & Sons
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KNITTING OILS
SULPHONATED OILS
SOAPS
SOFTENERS
BOIL OFF OILS
See Consolidated Textile Catalogs

Laurel Brand

Textile Treatment Specialists since 1909
Laurel

A COMMITTEE consisting of the president, secretary and four other officers of the American Federation of Full-Fashioned Hosiery Workers on May 17 had the first conference with a committee of manufacturers operating unionized mills, in a proposal of the latter for a downward revision of the piece work wage scale and a plan for operating plants on the two machine system, as discussed informally at a meeting of manufacturers and workers on April 17 during the Knitting Arts Exhibition in Philadelphia. What was accomplished at the May 17 parley, at the Gotham Fifth Street mill in Philadelphia, has not been disclosed, and it was intended to issue no report until the committees have agreed upon some line of action or announce failure to agree. Both sides look for a succession of meetings. The manufacturers' committee consists of S. E. Summerfield, of the Gotham Silk Hosiery Co., chairman; Joseph Haines, Jr., president of the Haines Hosiery Mills; William A. Drexel, of McCallum Hosiery Co., and Arthur Van Raalte, of Van Raalte Co.

have been waging a campaign among retailers for giving to them all the benefit of widespread advertising to the consumer. If B. V. D. lines do not make a high record in distribution of summer weights this year it will be not due to lack of expenditure of money and effort. And it need not be surprising if in the course of a few weeks the company comes on the market with a fall and winter line of cotton and part wool numbers, one of its lines of union suits designed to sell in retail stores for $10 per garment, according to a New York authority.

Men's Track Pants Feminized for Women Adopting Shorts

THE season's sensation in women's underwear has been, still is and will continue to be rayon shorts as short as the shortest for men, described by one authority as track pants feminized. Women's shorts, however, combine an apology for a form of abbreviated union suit, cut low enough in the back to assure a coat of sunburn from the neck to almost the waist line. French panties or bloomers and a brassiere may constitute the summer under apparel. In any of the popular forms conforming to the shorts version there is a saving in rayon fabric that, since keen competition has set in, is felt in a saving in cost.

Despite the furor over dainty rayon underthings, mills in the Schuylkill Valley section of Pennsylvania are, mostly, quite busy with women's cotton union suits and vests. Reports from a half dozen manufacturers in and between Reading and Hamburg are much on the same order—plants operating to capacity, a few on overtime schedules, and well supplied with orders for medium weight union suits, bloomers and vests. The Royal Underwear Mill, in Reading, has just removed to larger quarters, having purchased the building formerly occupied by the Max Pfau Hosiery Mills. Since taking over two small plants, the company has entered the men's cotton underwear field, although still engaged chiefly on women's lines, and it is the intention to add women's rayons. One mill in the Reading area recently booked orders from a catalog house aggregating more than 8000 dozen undergarments for women. From which it may be deduced there still are women with whom lustrous and fluffy

BONE-DRY UNSHRINKABLE WELL-FINISHED

HARD MAPLE HOSIERY BOARDS

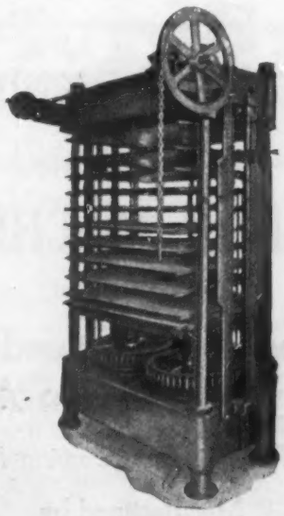
Give you that much desired finish that cannot be obtained from any other than wooden boards.

You get the length, lustre, *feel* that the goods should have.

Our special finish is highly recommended for silk and chiffon hosiery.

We serve the best mills—send a request for list and same will be forthcoming.

JOSEPH T. PEARSON & SON CO.
Manufacturers
Kensington and E. Boston Avenues
PHILADELPHIA, PENNA.



RELIANCE
Hot Plate Screw Press
FOR
Hosiery and Underwear
Write for Catalog and Prices
Reliance Machine Works
FRANKFORD, PHILA.

Stripper X

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If the postcript is so important,
let's start with it!

P.S.—Ask your neighboring mill men
what they think of

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For wetting out, penetration, retarding, level dyeing and softening.
We know the answer by the way they *reorder* ORTHOCEN

American Aniline & Extract Company

SINCE 1898

Dyestuffs of Quality

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Sole Manufacturers of rthocen

Chemicals of Originality

KARL LIEBERKNECHT

Full Fashioned

HOSIERY MACHINES

Are Known for

Speed When Needed—
Quality Production Always

(*The Machines Confirm It*)

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(In Any Desirable Gauge and
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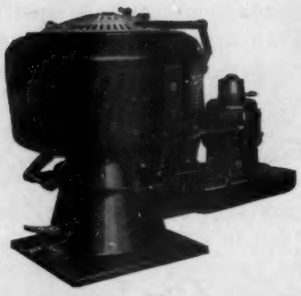
47 W. 34th St., New York, N. Y.

Lieberknecht Hosiery Machines have been made by KARL LIEBERKNECHT, Oberlungwitz, Saxony, continuously since 1873



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FOR treating rayon—for removing soaking solution from pure silk—for small lots of skeins—for hosiery or piece goods—you'll always find the American Underdriven Extractor ready for the job. Six basket sizes for loads of from 20 to 75 pounds. Write.

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For every dye-house need
. . . a *specialized* machine

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lingerie is not acceptable for use as underwear.

In the New York primary markets a dearth of business in men's heavy weight underwear was laid to "a cool Spring," and simultaneously where there were drab spots in light weights they were attributed to "cold weather." The publicity agents were not far wrong in either case. Because cool weather retarded sales of light weights, retailers were writing no advance orders for heavies. Trading in both may be expected to pick up on seasonal weather, and the heavy weight manufacturers are shaping their mill affairs for meeting a healthy flow of orders beginning in June.

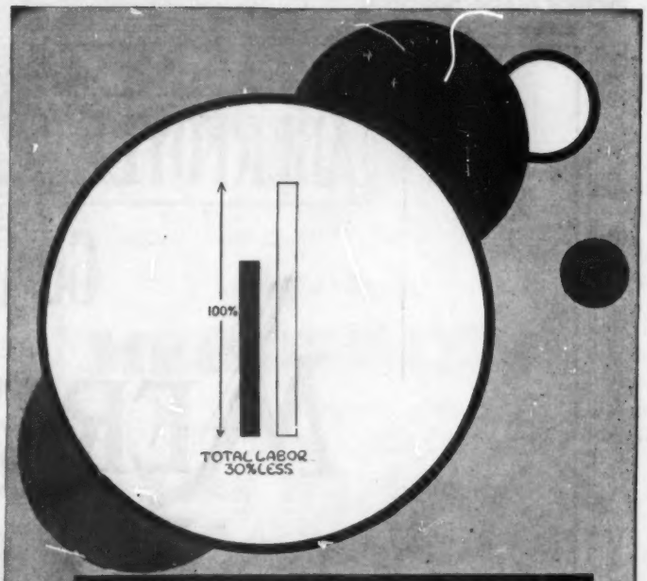
Drop in Worsted Yarn Prices Confuses Sweater Wholesalers

THE knitted outerwear trades sustained a mild jolt early in May from announcements by spinners of a reduction in prices for worsted yarns. For protecting their contracts with knitters and affording a measure of protection for knitters against cancellation of jobbers' orders, spinners had made a determined effort to maintain prices. When the bathing suit and sweater prices were named for the current season some of the knitting mills placed rather large yarn contracts, at what were believed to be safe prices, and booked a fair volume of advance business for Spring and Fall. So far as relates to mills, Spring business is well in the background, and will not be affected by the cut which represents a drop of at least 10 cents a pound from the season's peak.

After yarn had been contracted for at around $1.42½ to $1.45 cents, basis of high quarter blood 2/20s, prices were shot up until they reached $1.50 and several spinners asking $1.52½. Raw wool went into a decline early in the year and has not recovered, on the contrary, continuing to lose ground. Yarns sagged cent by cent, until spinners became engaged in price competition for what little business was offered, asking prices ranging from $1.42½ to $1.45. Then came the break of May 6 to $1.40, not unexpected to consumers of yarns.

Although no really high price yarn had gone into sfeaters sold for Fall distribution and manufacturers doubtless based their quotations on yarn at quite recent rates, it was expected numbers of jobbers with goods on order would ask for a rebate, and that some mills would make the reduced yarn value a pretext for quoting new lows to distributors with goods on order, with the idea of annexing some business not otherwise obtainable. At first blush the sweater trades were much upset by the cut in yarns. The bulk of the orders for Fall and Winter sweaters remain to be placed, and when the trade has recovered from its fright, it probably will be found that delayed orders will have been hastened by the revision, since there is felt no fear of prices going lower, barring an upheaval in raw wool. The bathing suit mills have had a big season and are virtually out of the woods so far as relates to the cut in worsted yarns.

ROCKLEDGE Silk Hosiery Co., a recent incorporation, is building a factory at Rockledge, a suburb of Philadelphia, in which the initial installation will comprise four 42-gauge leggers and two footers, to be on production by the end of spring. John N. Cogilchowske is president of the company.



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Alone Pays its Cost
Many Times Over

AUTO GYP
Process of Bleaching and Dyeing
IN ONE OPERATION

Provides Greatest Bleaching and Dyeing Economy on Top of Better Fabric Results

Autogyp bleaches, removes foreign matter and dyes to the wanted shade in one bath. Kier boiling, extra washings and rinsings are eliminated. Full strength of materials preserved—greater elasticity and softness results. And the saving in labor costs alone pays your bleaching and dyeing bill.

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MANGUM STREET,
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WESTAWAY BUILDING
HAMILTON, CANADA

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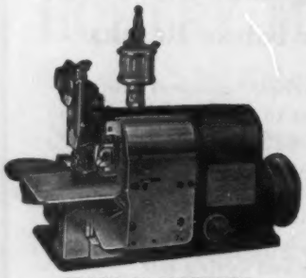
HIGH SPEED TRIMMING AND OVERSEAMING, OVEREDGING AND SHELL STITCH MACHINES FOR USE ON KNITTED AND WOVEN FABRICS OF ALL KINDS

——200 VARIETIES FOR 200 PURPOSES——



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STYLES 60-ABB and 60-D3B

For simultaneously trimming and joining ends of cotton, silk or woolen piece goods with a

FLAT BUTTED SEAM

Permits goods to pass through finishing machines, uninterrupted, for such operations as Shearing, Calendering, Mercerizing, Bleaching, Dyeing and Printing—with *remarkable saving*—both in labor and fabric.

Butted Seam, natural size, made by STYLE 60 ABB MACHINE on Cotton Goods which have been subsequently processed. The STYLE 60 D3B makes a similar though much wider seam designed for use on sleazy or loosely woven goods to insure holding.

OTHER RECENT DEVELOPMENTS—FOR THE RAYON TRADE

STYLE 60 RD —For a three-thread overedge finish, either straight or scalloped, on Rayon Bedspreads and other sleazy articles on which the ordinary edge finish will not hold.

STYLE 60 JDC —For two-thread **FLAT SEAMING** on Rayon Underwear.

Let Us Demonstrate the Work of These and Other Machines on Your Own Fabric.

THE MERROW MACHINE COMPANY

16 LAUREL STREET, HARTFORD, CONN.

Among the Knitting Mills

WESTCOTT Hosiery Mills, Dalton, Ga., are erecting a new building, 100 x 225 feet, with a floor space of 55,000 square feet, in which 700 additional knitting machines will be installed. This will give the mill a total of 1200 knitting machines, with more than 1,000,000 pairs of hose per month production when completed. The building will be modern in every respect, with locker rooms provided with shower baths, recreation rooms, lunch room, etc.

The mill to be erected at Columbia, Tenn., by the Cadet Knitting Company of Philadelphia, will contain approximately 51,000 square feet of floor space in the manufacturing buildings.

General contract for the construction of the mill building of the Fleetwood Silk Hosiery Corporation, Charlotte, N. C., has been let to T. C. Thompson & Bros., Charlotte, N. C., through the Charlotte office of Lockwood Greene, Engineers. The building will be of brick and steel construction, 100 x 110 feet, two stories, and will accommodate, at the start, 23 full-fashioned knitting machines.

The Nu Fashion Hosiery Mills, Murphy, N. C., will install 120 automatic seamless machines to produce women's rayon hosiery. G. T. Whitlock, of Hendersonville, N. C., is the manager.

The Sterling Hosiery Mills, Inc., Forest City, N. C., have purchased ten additional 42-gauge Reading full-fashioned hosiery machines to be installed in the Spindale plant. K. S. Tanner is president and T. Max Watson is treasurer.

Walter Fred Hosiery Mills, Inc., Nashville, Tenn., will install H. S. L. (Theo. Lieberknecht) machines, purchased from Alfred Hofmann, Inc., West New York, N. J.

It is announced that the Durham Hosiery Mills, Durham, N. C., will install 25 additional full-fashioned hosiery machines. When installed, these new units will give the mill a total of 79 machines.

Burlington Hosiery Company, Fieldale, Va., are erecting a 140 x 140 foot saw-tooth building in which a total of 34 42 gauge full-fashioned machines will be placed in operation at an early date.

Ellis Silk Hosiery Co., Charlotte, N. C., have acquired a building at 512 South Graham St., where, it is reported, 32 machines will be installed for the manufacture of full-fashioned hosiery.

Miller-Smith Hosiery Mills, Chattanooga, Tenn., are completing the installation of several full-fashioned machines, added to their original equipment, purchased from the Textile Machine Works, Reading, Pa.

Gold Seal Hosiery Co., Inc., New Orleans, La., have taken over the plant of the Floradel Mills of that place, which contain 73 knitting machines, with a capacity of 800 dozen pairs of hose a day. Thomas H. Price is superintendent and E. B. Ferguson is president.

Union Mfg. Co., Frederick, Md., are proceeding with the construction of a 100 x 100 foot one-story brick and steel building in which machinery for the manufacture of ladies' full-fashioned silk hosiery will be installed. Lockwood Greene, Engineers, Inc., New York City, are the engineers.

LOOKING forward to an ultimate installation of 250 full-fashioned machines, the United States Silk Hosiery Mills, which in the last two years acquired at receiver sales the Brown-Phelps and Glen Knitting Mills, Philadelphia, is adding 42-gauge equipment and contemplates an addition to its battery of 45-gauge, of which it has eight machines.

WITH present addition of eight 45-gauge machines, Brownhill & Kramer, Philadelphia, will have a total of 98 machines, as many as can be crowded into the factory, it is stated by Mr. Kramer.

THE children's underwear mill of Lesher-Raig Knitting Co., Ltd., Reamstown, Pa., was bought several weeks ago by Howard S. Stainton, a retail dry goods merchant in Ocean City, N. J., and a member of the underwear firm of Stainton Co., Philadelphia.

THE ELMORE COMPANY
MERCERIZED
YARNS
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N.C.

Single Yarns
MERCERIZED
Licensed Manufacturer
TINTED YARNS
Bleached, Dyed, Mercerized
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FELT
For all Mechanical Purposes
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Complete stock for immediate delivery
Samples and Prices Upon Request.
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SINGLE or PLY
Natural---Gassed---Dyed---Bleached
MERCERIZED YARNS
All Counts and Descriptions for the Knitting, Weaving and Converting Trade
DIXIE
MERCERIZED YARNS

The Yarn Market

Philadelphia, Pa., May 16, 1929.

LOOKING back in review over the Philadelphia cotton yarn market for the past month or so offers little in the way of encouraging retrospect from the standpoint of the yarn spinner and seller, as to the conditions that have prevailed. There has been a situation, increasing somewhat in its influence as the month went by, which was not exactly healthful from the viewpoint of the seller or the market as a whole. More recently, however, following a slight reduction in quoted values, turnover has increased somewhat, and spinners feel more hopeful, provided more or less long-time requirements are not taken care of at the lower rates, that things will be better when more definite opinion is possible as to the outlook in both cotton and cotton goods.

The report here last month reported the condition up to and including the week ending April 13th, and it will be continued from that point. In that week inquiries for carded yarns began to be more numerous, and rates apparently were getting onto a basis of stability.

In the next week, though, some buyers were asking that orders placed be held up for a while, and nothing to encourage the market took place. Many factors believed that a more settled condition than existed in cotton trading would be necessary to make any radical difference in the yarn situation. During this period combed yarns were reported to be a little more loosely held, and the numbers in the coarser groups saw some little reduction. Toward the end of the week knitting numbers, particularly, opened up into a little more strength, but those yarns which sold and commanded better rates, it was understood, were of a better quality than the ordinary run-of-market. There was a depression in the cotton market but it did not affect yarns as a whole.

The pressure of absent business seemed to increase during the next week, beginning on the 22nd, and there were more sellers who were ready to accept lower prices. The carded yarns of ordinary grade experienced further reductions—amounting for the most part to shadings—but this failed to enliven buyers' interest to any great extent. The situation seemed to be only one of languid interest on the part of buyers; not one of an active effort to work down prices. Cotton went down this week to a new low since February, although spinners insisted that the cotton to produce yarns of the quality that was selling still cost them more than the quoted market.

Going into the next week, during which April was ended, the yarn market found a good increase in inquiry had developed over the week-end, for carded goods, the business apparently being concentrated with a few houses. Combed yarns continued quiet; apparently the big factors had contracted several weeks ago when the situation seemed better. The market emerged from April with a better attitude than when the month began; although prices were some lower, there was more optimism because such a dull month had been passed with no radical break in conditions.

The market went into May with more activity than a month previous, though less than a year before. Price seemed to be the main obstacle in the way of trading. The first week of the month saw a general reduction of around one-half to a cent in most numbers in the carded group and in the single combed counts. There was reported a good turn-over but nothing healthy in the way of price. The week of the present writing has shown no important change. But, as indicated, factors on all sides are hopeful for a better condition when more definite calculations can be made as to the immediate probable developments in cotton and in cotton goods conditions.

Philadelphia prices on May 16th follow:

Single Skeins.

4s to 8s	29 @29½	10s	30 @30½
12s	30½ @31	14s	31 @31½
16s	31½ @32	20s	33 @33½
24s	35 @35½	26s	36
30s	37		

Two-Ply Skeins

8s	29½	10s	30½
12s	31	14s	31½
16s	32	20s	33½ @34
24s	35½ @36	26s	36 @36½
30s	37 @37½	40s	44 @45

Single Warps

10s	30½ @31	12s	31 @31½
14s	31½ @32	16s	32 @32½
20s	33½ @34	26s	36½ @37
30s	37½ @38		

Two-Ply Warps.

10s	31	12s	31½
14s	32	16s	32½
20s	34 @34½	24s	36½
26s	37	30s	38
40s	45 @46		

Frame Spun Carded Yarn on Cones

8s	28½ 29	10s	29½ @30
12s	30 @30½	14s	30½ @31
16s	31 @31½	18s	31½ @32
20s	32 @32½	22s	32½ @33
24s	34½ @35	26s	35 @35½
30s	37 @37½	40s	44 @45
30s dvl. carded	39 @39½	30s tying in	35 @35½

Carpet and Upholstery Yarn in Skeins.

8s and 9s 3-4 hard white warp twist	29½ @30
8s and 9s tinged tubes	28 @28½
8s 3-4 hard twist waste	27½ @28

Two-Ply Combed Peeler Skeins and Warps.

8s	44	20s	46
24s	51	30s	53 @54
40s	56½ @57½	50s	60 @62½
60s	68 @70	70s	78 @80
80s	90 @95		

Single Combed Peeler Yarn on Cones.

18s	41 @42	24s	45½
30s	50	36s	52 @53
38s	53 @54	40s	54 @55
50s	60½	60s	68
70s	78	80s	93

Mule Spun Carded Yarn on Cones.

10s	35	12s	35½
14s	36	16s	36½
18s	37	20s	37½
24s	39	26s	40
30s	41	40s	49

Mule Spun Combed Peeler Yarn on Cones.

10s	44	12s	45
14s	46	16s	47
18s	48	20s	50
22s	51	26s	52
28s	53	30s	51
36s	57	38s	59
40s	60		